

G1 Whig at head

YALE
MEDICAL LIBRARY



HISTORICAL
LIBRARY
The Harvey Cushing Fund

Lectures

upon

the Institutions

of Medicine

by

William Cullen M.D.

Vol. 4th

London 1782

Lectures
upon
the Institutions
of Medicine
by

William Cullen M.D.

Vol. 4th.

Edinburgh 1768
9



Manuscript
18th
Leaf
Volume 4

De Buckle's Journal.

De Buckle's Journal.

The following are some of the
the most interesting facts of the
the history of the life in a word
the most interesting facts of the

De Buckle's Journal.

De Disciplina Medica.

Par 1 ad 24.
Gaulii Patholog.

Vide Page 16 Gaulii Pathol.

The Institutions are there Divided into

1st That which treats of health or Physiology.

2^d The condition of the Body in a morbid state;
or Pathology, under which the chief of the Saniotics are
contained.

3^d The doctrine of Means whether pre-
serving Health or curing Diseases.

Pathology.

Sect. 1.

In this part we shall follow the Text of Dr. Gaubius, endeavouring to correct his errors and supply his deficiencies. His Introduction does not strictly belong to Pathology. When in the beginning of our course we gave a different distribution of the parts of medicine, but we shall here stop to take notice of his distribution.

His first three Paragraphs contain nothing remarkable, but it must be observed he uses the term *Nature* in different Senses. In 4th 5th & 6th Paragraphs he comes nearer to his subject, speaking of the Actions of the Mind, of the Body, & of external Bodies. It was not here necessary to distinguish between the Mind and the Body, and the manner in which it is done here tends to lead into Error, as supposing some power acting independant of the body. The whole of what he says then is, that in considering the Action of one body on another, we must consider not only the ^{nature} ~~power~~ of the Agent, but also of the patient, and that the effects resulting depend in some measure on both. In 7th Par. the first application of this, which

Par. 1 ad 34.

Par. 1 ad 34.

needs no comment. (9) Come now to Haubius's definition of medicine which is not without its faults. It is sufficient to define by its effects without its means unless there is some other Art aiming at the same effect, by different means, we say then that Medicine is simply the knowledge of preserving Health and curing diseases. What he says of the ancient Physicians not attending to a Prophecy: laevo seems a mistake.

In (11) he proceeds to the several parts of medicine. In (12) besides the common condition he mentions also the particular condition of each person, on which subject Celsus speaks very particularly. As the number of particulars is so great, order is extremely necessary here, and that which he prefers is to distribute the parts as they respect Health or Sickness. One ^{he calls} part ΥΓΙΕΙΝΗ, the other ΙΑΤΡΙΚΗ.

We have next the division of the first of these in a very enlarged sense. This division is taken from Mr. Locke who proposes it in every Science. But I think if the ΠΡΟΙΟΝ be properly understood the next the ΕΠΙΟΡΙΟΝ follows of course. The ΙΑΤΡΙΚΗ is divided in the same manner.

This Division is very specious but of no great use. The whole of the first part is confined merely to avoiding diseases which cannot be done but
by

Part. 1 & 3A.

by knowledge of diseases. It is therefore better to take the whole of the sound State under the head of Physiology, that of Sickness under the head of Pathology, and the whole doctrine of Means under the 3^d head of Συμπενοσιον. It may be said here the Semioticks are entirely neglected, but if the Physiology & Pathology are properly understood this follows of course. But farther we are not prepared for the Semioticks till we have a more complete Nosologia Methodica.

D^r Gaubius adds that the chief foundation of medicine is placed in the Nature of man himself; there being something in the human Constitution, by which it often corrects its own deviations.

This is what is generally called Nature and has given rise to a Multitude of disputes. We shall not at present discuss this point fully, but only give what we mean by the operations of Nature.

We do not imagine that the Human Soul, tho' constantly present, ever acts independantly of the body, but the whole is carried on by corresponding powers, which correct their own deviations, as happens in several Mechanical machines. Thus some means are provided within us whereby the parts mutually assist each other. But D^r Gaubius rather imagines Nature something within us directing our Actions and guarding us from dangers in the

Par. 1 ad 34.

the same manner as a person who manages a ship directs it which way he pleases, even in opposition to Wind & Tide. Nature is therefore such a Constitution of the human Economy as tends to correct all deviations. We observe something very analogous to this in vegetables. The two surfaces of a leaf are different in their structure. For particular purposes one surface is exposed to the upper Atmosphere, the other to the earth. If the leaf is twisted so as to have its upper surface now lower & vice versa, it will restore itself to its former state if it can. If it cannot it turns again in another part and recovers its former state. In the same manner the wounds of Plants are healed, their morbid parts thrown off from their sound, & soon in many other respects.

The consideration of Nature taken in this light is really of the utmost consequence, but is pushed much too far by Dr. Gaubius.

It is the busing of the Physician frequently to correct rather than follow Nature. - Not certain too, whether he is right in supposing the practice of Medicine to be originally founded in Imitation of Nature. The proposition too *Medeci Natura Minis-*
tri, has at least done as much mischief as good. This is pushed to a ridiculous excess by the *Stalhmians*. -

Dr.

Par. 1 & 34.

Pathologia Generalis. Par. 34 & 53,

Dr Gaubius then proceeds to vindicate the Science from several objections, which part we may pass over as having no immediate connection with Pathology.

Pathologia. page 11.

Dr Gaubius next comes to speak of Pathology more particularly, but uses several terms which cannot be explained, at present. He uses the term *Pathologia generalis* for what relates to the general plan of the subject, different from other Pathologists.

Diseases, with their causes &c, are undoubtedly the chief part of Pathology. Such an Introduction as here used is very useful, as nothing leads into more Obscurity of Science than confusion of terms. Precision in the use of Terms is what we last arrive at, and is the effect only of great perfection in Science. It is probable then that the first terms are not proper, and yet we too readily adhere to them, and enquire rather what has been said than what ought to be said. We shall rather follow the last plan. Our language is chiefly got from Galen, and his false distinctions still adhered to. —

De

Par. 34, Ad 53.

The meaning of the term Morbus must be the foundation of every other in Pathology. It has been employed in two Senses

I. A Concurrence of Symptoms or apparent Lesions of various parts of the System. This is the most obvious.

II. That state of the body known or supposed on which these Lesions depend. This is the sense in which it is used by Gaubius - but the first Physicians took it in the former & most obvious sense, and some Physicians even now prefer it: Gaubius himself, tho' he has adhered to the Systematic writers, in his definition, is of another opinion as appears from other parts of his works vide Par. 836, 837, 88, 117, 117. He gives us his Apology in Par. 11. for still adhering to the Rules of the Schools; but with regard to the confusion of Cause & Effect we do not see that it is likely to arise.

Every thing in nature is a series of Links connected together, and it makes no difference whether we call the preceding link a cause, or the following one an effect. Tho' we consider diseases as apparent Lesions, this doth not preclude us from enquiring into their causes. In Par. 85. he prosecutes this matter farther, but the reasons he there adduces may rather be urged against him. Neither doth our definition of disease exclude the term Symptom,

Par. 34 ad 53.

as we shall show in another place, and which may 7.
be considered as parts of the whole. By this defining
diseases from their apparent symptoms we avoid
all danger of Error. Thus for instance in the Pleuritis.
If we define it by the symptoms, there is no dan-
ger of such a definition being called in question;
but if we attempt to define it from the supposed
state of the body at that time, it appears from
Savages what a number of errors we might
fall into.

It is necessary in our definition to add, that it is
independant of external Impediments & depends
on the Body itself. It is sufficient to carry this
along with us in our notion of disease. Dr
Gaubius next comes to limit the term, and con-
fines it to diseases of the Body, tho' he allows
that affections of the Mind may give rise to dis-
eases of the body. May he even seems to go farther
in his 39 & 52 Par.

There is some difficulty in fixing this point.
If there are affections or diseases of the Mind
absolutely independant of the body, as some
Pathologists think, these we have nothing to do
with. But of the others; the operations of Per-
ception as separate both from Impression and
Contraction are what we call thought; of these
there are a great number of Deviations into
various

Par. 31. ad 53.

various degrees of Jolly and vice, to which our Physiology doth not extend. Even tho we allow Memory to depend on Mechanism yet as it by no means reduced to any rule, we cannot consider its defects or diseases. We may then reject all these Observations of the Mind which seem consistent with our business & way of life, and which are to be corrected by words and not by Medicines.

On the contrary all those Observations which are inconsistent with our common business of Life are to be looked upon as diseases. Further all Affections of the Mind may be looked upon as remote causes of diseases.

Dr. Haubius introduces here his *Principium aegens a morbo distinctum* of which we have spoke before. But may oppose to this the Authority of Boerhaave who asserts that a certain state of the Mind must necessarily follow a determinate State of the body; if this be true we need only to consider the state of the Body, in medicine, and attend to the Mind only as connected evidently with this state.

Haubius next distinguishes *Turpitudines* from diseases, by which he means certain deviations in the Internal Structure of Parts, without giving any apparent impediments of the Functions

Par. 34. ad 53.

* If they are such as the Economy of our nature restores
of itself & are transitory they are not to be looked
upon as Diseases.

(a) In another place he defines Disease to be
every Deviation from such a state of health as is
ordinary to the Species or Individual, apparent
either to the Patient or Physician, uneasy, per-
manent, & dangerous.

Functions. This further touched on in 123 & 267 Par. - These are excluded in our definition, & if we admit Gaubius's we must add something to it to exclude them. The *Qualitates sensibiles laesae*, and *Excretorum vitia* are two of the parts into which Symptoms are divided, and are these Turpitudines or vitia. Whether these are to be considered as diseases or not is perhaps a discretionary matter, depending on the degree of uneasiness they give, and the possibility of removing them.

We must here make an observation with regard to Sauvages, who refuses to allow negative Symptoms; but his reasoning is by no means just, and we must necessarily admit them with Linnaeus & other Physiologists.

Gaubius next proceeds to another very considerable distinction of diseases, viz, with regard to the Latitudo Sanitatis. But there must necessarily be certain deviations from any standard of health in our System, nor can we compare one man to another in this respect. But even in the same man at different times there are considerable differences & deviations from his most perfect state of health, which yet cannot be looked upon as diseases.* We can now give our definition of disease more fully, which we say is an ⁽²⁾ evident, uneasy, durable Lesion of the functions depending on

28. ad 52.

Par. 53 ad 80.—

on something in the Body itself. This limits diseases in every part of the distinctions here entered into.

Gaubius next lays down some rules with regard to the conduct of our Reasoning, in investigating the nature of diseases; but these are only general ones & may be passed over. But he uses expressions here which are only compatible with the Stahlian System. We positively refuse that there are *Molimina Spontanea, nec causa morbi, nec Premidii adhibitis, attribuenda*; and therefore deny his conclusion *Medicus Natura minister*, and that the whole of the Practice of Physic depends upon an imitation of Nature. Even Gaubius himself is obliged to limit this afterwards, and says that it doth not hold universally in all diseases. We say that the power of Nature as we have explained it before, takes place in some diseases only, and that there is no occasion to limit ourselves to an exact imitation of this power, tho' it merits our attentive consideration.

De Causâ Morbi. Page 27 ad 34.

We now proceed to speak of the causes of diseases. Dr. Gaubius might have omitted his proposition that every disease must have a Cause; and his definition

(a) This term is not to be extended beyond those causes that act immediately on the human body. Other causes may modify the action of these causes but the consideration of these doth not belong to Medicine: Thus the action of the Wind acts as a remote cause on the human Body, but the cause of its blowing from this or that quarter is a point of Philosophy not Medicine.

definition of Cause might be supposed to be understood. A Cause is that which is strictly connected with the presence of a thing. Besides these Causes there are others, Principia,^(a) which imply the Possibility of the Presence of any thing. In investigating Causes he observes justly that this enquiry may be carried to a degree of Trivialness, and that it requires some limits. To a knowledge of the first Physical causes are not requisite, nor are these nice distinctions of Causes at all necessary. Of the causes of Schoolmen we have retained only the efficient in Physic. In ascertaining the proper division of Causes, Dr Gaubius has rather enquired what has been done this way, than what ought to be done: we shall therefore drop him a little and follow our own course.

The cause of a disease is, Status ille Hominis quo fit, ut naturales hominis actiones rite exerceri non possunt.

A disease itself is, Status ille Hominis in quo, naturales hominis actiones non exercentur.

This distinction is simple, obvious, & easily applicable in every case; but if we take Gaubius's definition it is very difficult to distinguish them sometimes. This state of the body which we call a *causa proxima*, is a Link in the chain of Cause and

Par. 53 ad 80.

and Effect, and must therefore have also a Cause. 12.
But of these causes we must consider those that
imply the Actuality rather than the Possibility of
the presence of the disease. Hence the distinction
into Proximate and Remote causes. To avoid ambi-
guity we might call these Principia. This term
is not to be extended beyond these causes that act
immediately on the Human body; other causes may
modify the action of these causes, but the Consider-
ation of them doth not belong to medicine. Thus
the action of the wind acts as a remote cause
on the human body; but the cause of its blowing
from this or that quarter is a point of Philosophy
not medicine. This is the fundamental distinction,
and every other is either subdividing these, or
substituting different terms for them. Gaubius sh.^d
therefore have begun with this & proceeded after-
wards to the other divisions; but he has follow-
ed the other method which is owing to his
false definition of disease at first.

He is himself apprised of the great importance
of this fundamental distinction, and that the
proximate Cause deserves our chief Considera-
tion. He seems too in the 67. Par. to take the
Causa Proxima in the same sense with us; but
he is always embarrassed in speaking of it, in
con;

Par. 53 & 80.

consequences of his definition of disease.

Boerhaave in defining disease & the Proximate Cause in the same manner as Gaubius does, is obliged to own, that the Proximate Cause is much the same as the disease. Indeed all the Systematics in speaking of Proximate causes are obliged to slide into our notion of disease, tho' in speaking of Remote causes they retain their own.

To proceed now to the Subdivision of Remote Causes. The principal is of Predisposing and Occasional causes. The first of these is improper but has been so long retained that we dare not alter it. Every Effect produced depends partly on the power of the Agent; partly on the nature of the Subject. Whatever then fits any Individual to be acted upon by particular Agents, and these only which do not act on others, the same is a Predisposition; and when an Agent is fitted to act on particular predispositions, this is an Occasional Cause. Gaubius substitutes the term Semini-
um for predisposition; and Potentia reciva either for Occasional causes, or for remote causes in general. The inaccuracy of Gaubius in this respect may be found in the 606. Par. where he is talking of Semini-um Naturala; some of these he says are common and inseparable from

from human nature; others proper to Individ:
uals. But the first of these are in the language
of the Mathematicians always given, and there:
fore may be admitted in our Consideration, since
they do not modify the disease at all, or furnish
any Indication of Cure, the whole here depending
on the power of the external Agent. We defined
prædisposition to be a particular state in an
Individual, fitting him to be acted upon by particu:
lar Agents; which takes away the necessity
of a *Seminium Commune*.

But I must confess there is some difficulty in
apply this doctrine in all cases: thus, if 90 out
of 100 are affected by any external cause, we
cannot think here of a *Seminium proprium*. On
the whole what acts on the Subject universally is
not to be called an Occasional Cause. This then
is to be called simply a Remote Cause. Thus the
Contagion giving a Clasp acts upon the *Seminium
Commune*, & those who escape it do it by some
power of resistance. Accordingly Gaubius very
properly observes, *Occasio Prædispositio solummo:
do nocet*. So the terms prædisposing & occasional
only proper when used as Relatives to each other.

We proceed next to observe another distinction
of Gaubius into Internal & External Causes. — There
is

from human nature; either proper to itself, or
 in the nature of things, and in the language
 of the Mathematicians always given, and
 may be admitted in our Philosophy, and
 they do not modify the sciences at all, or furnish
 any indication of them, the whole here depends
 on the power of the natural agent. The object
 of Philosophy is to be a particular case in the
 natural, fitting this to be acted upon by nature
 the agent, which takes away the necessity
 of a human instrument.

But I must confess there is some difficulty
 apply this doctrine in the case; thus if we
 of no one applied to any natural cause, we
 cannot think of a human instrument. The
 whole what acts on the subject instrumentally is
 not to be called an instrumental cause. But this
 is to be called simply a remote cause. But the
 instrument giving a help acts upon the human
 instrument, & there who causes it to be an
 power of assistance. Accordingly for some very
 properly observed, there is a distinction between
 the word, & the thing, & the instrument of assistance
 only proper when used as the other is said often.
 The word used to denote another distinction
 of nature into natural & human causes.

There is no occasion for this distinction, and Gaubius in this very Paragraph (58) uses the term Internal cause in two different Senses. 1.^d As predisposing cause. 2.^d As

Must now observe that sometimes there is some difficulty in ascertaining the Causa Proxima, as, whether it is simple or complex. An Ophthalmia may be produced by an increased Impetus of the vessels; but may also be produced by a Relaxation of these vessels. Gaubius rightly observes that such a complex proximate cause must be resolved into it's simple parts. But he speaks of such a complex Proximate cause, as consisting of several Remote causes which is not our meaning. In Hemoptoe the most common cause is a rupture of the vessels in the Lungs; we must still look for the causes of this rupture, as perhaps too violent exercise, or increased Impetus. But this increased Impetus may depend on Plethora, and this may be owing to a suppression of usual evacuations. So the Causa Proxima contains every condition of the Body which has a tendency to produce the several Phenomena. Therefore tho' we say that the Rupture of the vessel is the Proximate cause, yet all the other

Par. 53. ad 80.

(a) 91 - 80 - 119

other more remote causes mentioned, must be considered as parts of the Proximate Cause.

Hence Boerhaave's definition of the Proximate Cause is just. The *causa Proxima* taken in this Comprehensive Sense removes a Confusion that we might otherwise fall into by supposing that Proximate and Remote Causes are always in opposition to each other, and that a Remote can never become a Proximate Cause. The Mobility of the Nervous System is at first a Predisposition, but also an Occasional Cause concurring and producing Epilepsy, if that mobility continues it must be looked upon as part of the Proximate Cause. But even many of the Occasional and simply remote causes, if they continue after the disease is produced, & contribute to the Symptoms of the disease, must be considered as part of the Proximate Cause, since they give us an Indication we must attempt to remove.

A disease has it's Cause, which should be only the Proximate Cause. This has it's Principium, which is a remote cause. This may be either simple or Compound, and in this last case we may use Predisposing and Occasional. We would here introduce two new terms, *Principium transiens*, & *permanens*. The *principium transiens* is that which passes away as soon as it has produced

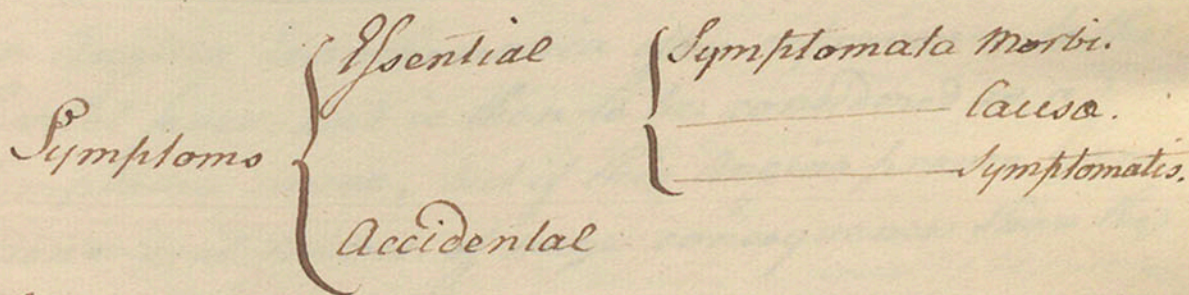
Par. 81. & 119.

produced it's Effect. The Principium permanentis 17.
is that which still remains and forms a part
of the Causa Proxima.

De Symptomate. Page 3A ad 52.

There is no occasion for any great Anxiety in settling the term Symptom: It is by use now confined to morbid Appearances, tho' probably equally applicable to that of Health. Of Gaubius's Definition we only admit of the first part, and therefore by Morbus we must understand Causa Proxima Morbi. The term Fontes Symptomatum is rather Ambiguous.

This division of Symptoms, which is the same as every other Systematic Author, is as follows,



Symptoma morbi - est Symptoma Causae Proxima.
----- Causa - est ----- Causa Remota.

----- Symptomatis est - when there is such a series of external Symptoms as we observe before of causes in the Causa Proxima.

Of

22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854. 855. 856. 857. 858. 859. 860. 861. 862. 863. 864. 865. 866. 867. 868. 869. 870. 871. 872. 873. 874. 875. 876. 877. 878. 879. 880. 881. 882. 883. 884. 885. 886. 887. 888. 889. 890. 891. 892. 893. 894. 895. 896. 897. 898. 899. 900. 901. 902. 903. 904. 905. 906. 907. 908. 909. 910. 911. 912. 913. 914. 915. 916. 917. 918. 919. 920. 921. 922. 923. 924. 925. 926. 927. 928. 929. 930. 931. 932. 933. 934. 935. 936. 937. 938. 939. 940. 941. 942. 943. 944. 945. 946. 947. 948. 949. 950. 951. 952. 953. 954. 955. 956. 957. 958. 959. 960. 961. 962. 963. 964. 965. 966. 967. 968. 969. 970. 971. 972. 973. 974. 975. 976. 977. 978. 979. 980. 981. 982. 983. 984. 985. 986. 987. 988. 989. 990. 991. 992. 993. 994. 995. 996. 997. 998. 999. 1000.

Of these the *Symptomata Morbi* are what properly constitute the disease and chiefly merit our consideration. To illustrate this division. Plethora is often the Cause of Epilepsy, and in such fits an Hemorrhagia Nasium is frequent, which is not a *Symptomata morbi*, but a *Symptoma Cause*. It must be observed however that Physicians have not always adhered to this distinction, but have confounded the *Symptomata Cause* & *Symptomata Morbi* together. The *Symptomata Cause* are frequently not Symptoms but one disease superadded on another. These then may remain after the Primary diseases are gone; and are then to be considered as a separate disease. Thus if both Catarrh and Rheumatism arise from Cold, if this last is slight we do not consider it as a disease but as a *Symptoma Cause*. In the same manner an Angina Icanthematica often supervenes to the Scarlet fever, and is then to be considered as a *Symptoma Cause*; but if this Angina proves Gangrenous, it proves of more consequence than the Primary disease.

Symptoma Symptomatis may arise from either of the former. Thus in Catarrh, if in consequence of the Cough an Hemoptoe ensue, this is a *Symptoma Symptomatis*. In the Asthma too the Patient

is oft obliged to sit for a long time in an erect posture, which is apt to produce swellings in the Legs, and this must be considered as a Symptom: *ma Symptomatis.* —

These *Symptomata Symptomatum* have a very intimate Connection with the *Symptomata Cause Proxima*, and tend much to explain both their Nature & degree. Dr. Gaubius adds that these may remain after the disease is gone; such a disease having induced a particular state of the body that continues after the disease is gone. Thus *Phthisis Pulmonalis* often follows the Measles; *Ophthalmia* the Small pox, &c. —

Besides these Gaubius gives another division of Symptoms taken from the effects of the *Vires Naturæ Medicalrices*, of which we have spoken before. These he says are not to be imputed to the Causes of the disease. But in opposition to this we find that in the case of an Abscess, this is a salutary tendency, but it has a reference to the *sine &c.* of the extraneous body producing the Abscess. These *Molimina Naturæ* are equally immediate consequences of the Causes of the disease, and are to be distinguished from other Symptoms only by their Tendency; in which respect they may be very justly distinguished. The *Lucta Naturæ cum Morbo*, and other things of that kind lead us only

These symptoms of inflammation have a very
 extensive connection with the sympathetic
 system, and tend much to explain both their
 nature and course. Dr. Ferrius adds that they may
 remain after the disease is gone; but a
 disease involving a permanent state of the
 system after the disease is gone, is not
 uncommon after the disease is gone. It is
 the same for 5.

But the further one another
 of symptoms taken from the effects of the
 nature of the disease, of which we have
 before. The disease is not to be regarded as the
 cause of the disease, but in opposition to this
 we find that in the case of an acute, this is a
 necessary condition, but it is a necessary condition
 one of the necessary conditions of the
 life. The disease, however, is equally common
 to the cause of the disease, and one
 to be distinguished from other symptoms only by
 their tendency in taking place in the way of
 very little disturbance. The disease is not
 to be regarded as the cause of the disease, but in

to a metaphorical Language, which is apt to deceive. ~~is~~. But tho' Gaubius inclines here to the notion of the Stahlans, he doth not go their whole length, but points out the bad consequences of an adherence to their System in that respect.

He next proceeds to this 3^d sort of Symptoms which he calls Accidental. A sick person is exposed as well as a healthy one to various accidents, which may be differently modified by the present disease, and will oft have a great effect on the disease, either aggravating it or perhaps changing it entirely. These are called by Physicians the *Επιρρομενα*, tho' Gaubius endeavours to limit this term to the *Symptomata Activa*, or *Molimina Naturæ*, but seemingly without reason.

These Symptoms have not at all an equal weight or importance, hence arises another division of Symptoms into the *Necessaria* & *Non necessaria*. The *Necessaria* are such as are immediately connected with the Proximate Cause, and so are to be distinguished both from the Accidental Symptoms, *Symptomata Cause*, & *Symptomata Symptomatis*. What are properly the *non necessaria* is not very easy to say. We may lay down some general Rules on the subject, but it will not be easy to apply them in every particular instance.

There

Par. 81 ad 119.

Par. 120. ad 130.

There is still another Subdivision of Symptomata necessaria into such as appear from the very beginning, and subsist in the same form during the whole course of the disease, & others that occur in particular periods.

Pathologia Specialis.

Having now finished the Pathologia generalis, we shall touch upon the distinction of Generalis & Particularis, which Gaubius seems to have introduced in an improper place.

He divides it into 4 parts at first; the Nature, Differences, Causes, & Effects of Diseases; but Differences constitute a part of their Nature; so only divided into 3 parts. It will be proper undoubtedly in this division to treat of the Causa proxima; but if Dr. Gaubius has done it at all it is under the Nature of diseases.

The Pathology is undoubtedly a part of a dogmatic system which is chiefly investigated by a knowledge of the Proximate Cause. It must treat,

I. Of the Causa Proxima, or, as Gaubius calls it, Nature of diseases.

II. Of the principles of Diseases, which are the Semina & Potentia novica of Gaubius —

Par. 120. ad 130.

Par. 125. ad 130.

III. Of the Symptomata — considered as effects, of the *causa proxima*; but as diseases consist in a concourse of different Symptoms, so the *causa proxima* often consists of a concourse of Series of different conditions of the body; Each of these conditions then are to be considered separately as far as they can.

These abstract Considerations are what Gaubius treats of under the title of *Morbi Simpliciores*; but will be better to consider these not as diseases, but as parts of the *causa proxima*, and to call them rather *affectus simpliciores*, by which term even Gaubius calls them in another place.

The three first parts then of Pathology according to Gaubius depends on these *Affectus Simpliciores*. But there is occasion for a 4.th part to which the *Morbi compositi* may be referred. Dr. Gaubius is aware of this, and gives another more complete division, first of the *Affectus Simpliciores*, then of the *affectus Compositi*. But unluckily there he touches them only as accidental differences, whereas here he introduces differences constituting different Genera & Species.

We are then first to consider the *Affectus simpliciores*, according to the meaning we have assigned to the term —

The

III. Of the symptoms
of the same disease, but at different periods
in the progress of the disease, as the
same person often exhibits a variety of
series of different conditions of the body; each
of these conditions has now to be considered
separately as far as they can.

Par. 125. ad 130.

Par. 130. ad 130.

The first division of these is into the *Contenta* and *Continentia*, or Fluids & Solids; the Solids are divided into the *Simplicia & viva*, and these again into the *Organica & Inorganica*.

Before entering upon the *Solida simplicia* Gaubius promises

Analysis Chemica generalis corporis humani.

This is Gaubius's account of the Chemical Analysis of the Animal Miel: This seems scarcely proper here and I think (pace Tanti viri) very ill executed. The whole we can discern of the mixture of animal miels is this, that it introduces more or less water into its composition, and that the difference of parts depends on the different proportions of water in them. What Gaubius says appears to be without foundation, and even supposing it true doth not admit of application: We shall offer a very simple system on this subject.

The System I have to offer you, Gentlemen, is a very simple one. In the first place I shall begin with delivering some general propositions the Truth of which we have not time to prove in detail.

(We begin with supposing that in Nature there are)

Par. 130. & 150.

Analysis Chemica generalis corporis humani.

are properly only two kinds of Matter. One Atoms, or solid indivisible Bodies, of one figure & one size uniformly. The other is a subtle Elastic fluid, by which every Atom is surrounded as by an Atmosphere. The Atoms we consider as miets, and their only Influence to be to modify their surrounding Atmosphere. But this we confine to one circumstance, that a certain Continuity in any two Atoms diminishes the Elasticity of the Ether interposed between them, and therefore encreases it in the parts left more free.

Admitting this & we can explain Attraction, for it consists in two Atoms in such Contiguity that the Ether without them is of greater density than their peculiar surrounding Ether, by which means they are pressed together. All the properties that we can discern in Bodies are to be referred to the two heads, Modes of Attraction, and Modes of Cohesion. For they are all either properties of Aggregates which consist in Modes of Cohesion, or of Miets which are either to be referred to Cohesion or Attraction. This shews how very important the proposition delivered above is; but Cohesion & Attraction are greatly diversified. This we imagine depends on the different

Par. 130. ad 150.

different Arrangement of Atoms applied to each 25.
other.

The Atoms in their first Contraction cannot be applied at random, but will be united so as given numbers are round a Centre. The possible combinations round a Centre are only 6, viz, the Sphere, & 5 regular Solids. In these combinations there must be a different state of Atoms & Ether, and consequently a different force of Attraction. The effects of the different degrees of Density of Ether giving different degrees of Attraction are not yet sufficiently ascertained to allow us to be more particular on this head. In these combinations there must be a different state of Atoms & Ether, & consequently a different force of Attraction. The effects of the different degrees of density, of Ether giving different degrees of Attraction are not yet sufficiently ascertained, to allow us to be more particular on this head. In the next place every view of Nature leads us to believe, that from those Atoms to the Organic matters we see there are constant Lines & degrees, before we arrive at those higher degrees of Composition with which we are chiefly conversant.

But it has been supposed that these Compounds consist

Par. 130. ad 150.

The atoms in their first formation cannot
be applied at random, but will be united
as given numbers are found a centre. The
possible combinations would be a centre are not
in the sphere, but regular bodies. In these
combinations there must be a different state
of atoms & their, and consequently a different
force of attraction. The effects of the different
degrees of density of their giving different de-
grees of attraction are not yet ascertained.
Ascertained to allow us to see more fully what
on this head. In these combinations there must
be a different state of atoms to their, & consequently
a different force of attraction. The effects of the
different degrees of density of their giving dif-
ferent degrees of attraction are not yet ascertained.
In these combinations there must be a different
state of atoms to their, & consequently a different
force of attraction. The effects of the different
degrees of density of their giving different de-
grees of attraction are not yet ascertained.
Ascertained to allow us to see more fully what
on this head. In these combinations there must
be a different state of atoms to their, & consequently
a different force of attraction. The effects of the
different degrees of density of their giving dif-
ferent degrees of attraction are not yet ascertained.

consist of Elementary parts of the same Nature 26.
with the Compound and giving it its properties.
But the Supposition of such Chemical Elements,
is unnecessary & further is contradicted by the
whole Phenomena of Nature.

The most simple Combination we see is Adhe-
sion in which the Body suffers no change in its
properties. The next degree of Combination is Solu-
tion in which the Body suffers little change ex-
cept in Aggregation. But in mixture we find no
Body Possessed of the same properties with its
ingredients, which overturns the Chemical doctrine
of Elementary parts. But because we can decom-
pose this mixt & recover the former Ingredients
we suppose that the Ingredients contribute to the
Properties of the Compound.

Both Corpuscularians & Chemists have run into
a kind of middle System, supposing that we can by
Decomposition obtain the constituent parts of the
Compound, whereas we can do it only in a few
instances. It is true that we know a little of the
Constituent parts of Salts, less of Inflammables, but
scarcely any thing at all of other Matters. Neither
do we know any thing more of the Constituent
parts of Animal or Vegetable Matter, than of Metals,
Earths &c. We find all matters presented to us in
one

Par. 130. ad 150.

X He says that the difference of Structure in our Body depends on the different proportions of these Matters, viz his Humidum & Siccum. But — &c.

one or other of the six general forms; ^{and as Animals & Vegetable Matter resolve into one or other of these forms.} they are sup: 27.
posed to be of the same nature. But we know nei:
ther the proportions of these parts nor from the pro:
portions can we judge of the qualities. Many bo:
dies in Resolution resolve themselves into a dif:
ferent form from what they had before. The same
too happens in Combination; so that two bodies
neither of which were inflammable, may on Combi:
nation become Inflammable.

We can in very few instances say what are the con:
stituent parts of (Bodies) matter. Thus in Animals &
vegetable matters we can by a little variety in the ^{chemical} treatment of them, obtain a different resolution. Neither
has this ever yet led us to discover the particular
properties of any one vegetable. So imperfect is our
method of Philosophising, and such Dabblers as yet
are we in true Science.

After this general discussion we shall make
only a few strictures on particular passages in
Gaulius.†

The Humidum & Siccum is not a fundamental dis:
tinction of Matter, but depends on the mode of aggre:
gation, and the Combination of two bodies will
give a difference in this respect. He says that the
different structure in our Bodies depends on the
different

different proportion of these matters. This as a general proposition is by no means applicable; nor is the Siccum in particular a fundamental matter or consists of the Species Siccæ mentioned hereafter. Siccum, says he, coherens est, which seems to me no more than to say coherent Bodies are more coherent. But the presumption in this respect, when we ascend to the more simple parts of matter, lies rather in favour of the fluid. Diamonds, the most coherent bodies, appear to have been formed from a fluid. In very firm cohesions too, as in Neutral Salts, a fluid matter still continues. With regard to the Siccum Inertius we know of no activity in matter, except a disposition to be united to another Body. Fluidity indeed favours this, but fluidity is not exclusive of any kind of matter. We would refuse too, Siccum calore æquius dissipandum for a general proposition. Thus the ϕ is far more volatile than water, tho' a dry body. So that the whole of it is this, that what remains after dissipation is found in a coherent mass, which doth not at all refer to the original parts of this matter. Gaubius next ventures to give a threefold division. But if such a division of Elementary Bodies is to be admitted at all, why is Air excluded? It may be asked too whether Air is humid or dry? It seems to be the foundation of Fluidity in water, and

Par. 130. ad 1A9.

of consistency in Earths sometimes, which is very opposite to the chemical Notion of Elementary parts. In prosecuting this division almost every part of it is contradicted by facts, and is both without foundation & application. What he says of Gluten is the same doctrine we criticized in Haller.

From this System he supposes he derives the manner of our Nutrition. But several Soils contain all the Elements he mentions here, which yet are not found nutritious. Why is not Nitre equally nutritious with Sugar?

Another Application he proposes is to explain the Nature of Putrefaction, but it doth not advance the least step towards explaining the principal Phenomena belonging to it. For how will it explain that Solution of Air which seems so absolutely necessary to that process? On the whole, Dr. Gaubius reasoning on this head is absurd, and serves only to point out the defects of the chemical doctrine of the particular Elementary parts of Bodies. —

Morbi

150 - 169.

Morbi. part. Sol. Simplifics. Page 63. Par. 150.

We come now to speak of the several Simple affections of the Human body, in which either singly or in concurrence the proximate cause of diseases consists. We begin with considering the affections of the simple Solid, & this, with Gaubius, we call *Linca prima pathologica*. He begins with considering it as different from fluid. This depends on cohesion, for the several matters of which they are composed are quite the same & different only in proportion.

The most simple affections then of a Solid, are such as affect its cohesion. This train of thinking of his is not just, for our simple solids may be considered in their Aggregation, cohesion, or mixture: but so far alone as they serve some function of the body, is their cohesion to be considered. The modes of cohesion oft lie in the Elements themselves, and therefore he is too general in saying that such Consideration is not at all necessary. But we shall begin with the affection of cohesion.

Cohesion, says he, may be faulty in defect or excess. This Consideration leads only to the force of Cohesion; but there are many other modes necessary to be considered. He accordingly premises, that all these are to be considered as relative only. He first considers the several species of morbid affections, then

1501 169. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854. 855. 856. 857. 858. 859. 860. 861. 862. 863. 864. 865. 866. 867. 868. 869. 870. 871. 872. 873. 874. 875. 876. 877. 878. 879. 880. 881. 882. 883. 884. 885. 886. 887. 888. 889. 890. 891. 892. 893. 894. 895. 896. 897. 898. 899. 900. 901. 902. 903. 904. 905. 906. 907. 908. 909. 910. 911. 912. 913. 914. 915. 916. 917. 918. 919. 920. 921. 922. 923. 924. 925. 926. 927. 928. 929. 930. 931. 932. 933. 934. 935. 936. 937. 938. 939. 940. 941. 942. 943. 944. 945. 946. 947. 948. 949. 950. 951. 952. 953. 954. 955. 956. 957. 958. 959. 960. 961. 962. 963. 964. 965. 966. 967. 968. 969. 970. 971. 972. 973. 974. 975. 976. 977. 978. 979. 980. 981. 982. 983. 984. 985. 986. 987. 988. 989. 990. 991. 992. 993. 994. 995. 996. 997. 998. 999. 1000.

then their causes.

In his definition of Debile, he seems to confound the Lacum with the Debile, & want of Elasticity with both. Gold & Lead are both soft bodies; but Lead is weak in point of Cohesion, Gold is strong. Gold too differs more from Iron in Elasticity than Lead doth. Debile is confined more properly by Boerhaave to the force of Cohesion.

We should chuse to distinguish the species in another manner. Parts of the human body distinguished as Hard & Soft. In Soft parts three morbid affections to be noted. 1.^d Debile, which respects the force of Cohesion. 2.^d Lacuity, when too flexible & yields too much, the Cohesion still remaining entire. — 3.^d where with Lacuity it wants Elasticity. To the first of these, no morbid affection in the system is opposed; and only faulty in excess when joined with the opposite to Lacuity, Rigidum. There may be an excess of Elasticity too, but this very seldom occurs in Animal fibres. So on the one hand these three already mentioned, and the Rigidum on the other are morbid affections of soft parts.

In Hard parts, we find these morbid affections, viz., 1.^d Fragile, but this may be with a force of Cohesion so as to oppose contraction, yet very readily yield to percussion. We may condense it in soft Iron

Iron and Steel, which do not differ much in Cohesion but greatly in their disposition to break on Percussion.

Dr Gaubius also mentions a disposition to break, depending on certain inequalities in Bodies, which belongs to Robustum.

But besides these relative modes there is the absolutely Hard & Soft. Thus, softness in the Bones, in whatever degree, is a morbid affection.

To consider them now in Dr Gaubius's terms. He subdivides debile into two Genera, the first of which he again subdivides into Laxum, Iners, & Flexile. He takes Laxum differently from Dr Boerhaave, and it is to be separated from the Flaccidum, & referred only to Flexibility with Elasticity. His instance here is not very happy as it regards Organic fibres. To these degrees of Laxity he adds the absolute softness. — His second Genus of Debile is what he considers as the Sole Debile. — His first species is a Seminium & not a morbid affection, except when existing in particular parts, and not in the whole System. His Tabidum respects Putrefaction only; but this is improper, and we want a proper general term to express that variety of mixture diminishing the force of Cohesion. This contradicts what Gaubius set out with, that the Consideration of the State of Mixture was not necessary to Pathology.

logy. He next distinguishes between *Fissile* & *Fragile*; but doth this by their manner of breaking longitudinally or transversely. Bodies shrink in their Bulk as their humidity exhales. If their adhesion then to surrounding Bodies is greater than of their parts to each other, this is one of the Foundations of the *Fissile* - Another from unequal Exhalation, as in humid clay - A 3^d where the parts are of a particular structure and the Force of Cohesion is different; as happens in Wood where the Cohesion is greater longitudinally than transversely - Gaubius confines himself to this, but we think no such takes place in human bodies. The *Fissures* that occur there are chiefly in the *Epidermis* or *Epithal* where there is no such fibrous Arrangement. There is one singular fact with regard to *Fissures* in the human body that they observe a particular direction. In case of Reunion after a wound, the Substance is less firm than it was originally; hence old Ulcers are apt to break out again in the Scoury. (vide Lord Anson's voyage.)

The *Fragile* here is not to be considered as always in consequence of Erosion. But this is to be opposed to the proper *Fragile*, as *Tenenim* is to *Fabidum*. We abstain from the Causes of this before

is to be taken from the same of
 to be applied to the right, as shown
 always in management of business. That is
 the right way is not to be considered

and shown correct.
 one of the best and again in the theory of the
 firm that it was originally, there is a
 of business after a time, the relation is the
 that they show a business relation, there
 feel with regard to business in the business
 from management. There is one important

change or shift. There is no such
 effort that our business is in the
 in fact, the business is in the
 business confers himself to his but not
 greater long term, the business

happens in that when the business is
 and the form of business is different, as
 to be shown the facts are of a business when
 from various relations, as in business

is one of the important of the business. That
 is greater than of their facts to each other, the
 of their relation then to surrounding factors
 which in their fact is their business relation
 breaking long term, as in business, that is

logically. The next distinction between the two
 things is that the business is not the same of

before we have mentioned the Species of Rigidum—
 As he uses the term Rigidum for all these three Species, he is obliged to invent the new term Senax, which is the same as the Rigidum of Boerhaave. The Durum is the absolute hardness spoke of. Whether a Fragile vitrum can occur in Animal bodies is uncertain. By age they grow more vitreous, but we doubt whether they ever arrive at the state here spoke of. We doubt the Fact of a Sympne fragiliora, for tis, probable at this time the Bones continue much the same, the sudden falls, Tension of muscles, the hardness of ground will fully account for Accidents.

(We have given (over the Leaf) a Table of our Doctrine)

Tabula

An Explanation of the Table.

In the first place there may be a faultiness in absolute qualities, which are *Durum* in *Mollibus* & *Flexile* in *Ossibus*. The others are only relative & ought to consider these separately as in the soft or hard parts. The Defects of Cohesion in the soft parts are the *Debile laxum* & *flaccidum*. The first of these admits of a subdivision as depending on the gracility of the Fibre which is the *Tenerum* of *Gambius* & the state of the mist which *Gambius* improperly calls *Tabidum*.

On the other side the only excess is *Rigidum*. In the hard parts the defect of Cohesion gives the *Fragile Spongiosum*, the excess of it the *Fragile Vitreum*.

We have omitted here only the Term *Pisile*, which is sometimes to be referred to *Fragile spongiosum*, sometimes to *Fragile vitreum*.

Sabula

qua affectus partium solidarum simplicissimi exponantur.

Cohasionis

Defectus

Excessus.

Relative

Absolute.

Relative

Flexibile in Quatuor Qualib. In part. moll. In part. dur.

Durum.

In part. moll.

In part. dur.

Inagile. spong.

Rigidum. Inagile. vitreum.

Debile laxum & flaccidum

Tenerum

Solidum *

* This property belongs to the state of the Animal mixt, & not to the aggregation of the Simple Solids.

五

We now come to consider the causes that may affect simple Solids, either considered as a simple fibre or as a more organic Structure. This consideration may be referred to 2 heads.

I. The Matter of the Fibre.

II. This Matter given, Circumstances that affect the motion of it's parts on each other.

The Causes affecting affecting the matter of the Simple Solid are those affecting the humidum & the Siccum; for the conditions of the Solid differ according to the different proportion of these. Thus if the water is in greater proportion it gives, 1.^d A weak Cohesion. 2.^d A greater Laxity. 3.^d From want of Elasticity in water more Placidity. —

If we diminish the proportion of water still preserving the Laxity, the Elasticity may be increased, which is a compound Ratio of the force of Cohesion & the Flexibility. But as the water is diminished, the force of Cohesion still increases & the Flexibility is diminished; so that it may pass through the debile, Laxum, & Placidum in passing to the Rigidum.

We must now enquire what is in the human body giving these different proportions of Humidum & Siccum. These are various, as 1.^d The difference

ference of the nutritious matter; It is probable that this as applied to the solid, is always in a fluid form; yet still there is some latitude in respect of its properly fluid state. For in the formation of the different simple inorganic parts, as the hair, nails, &c. there is a difference of density which seems to show a difference of fluidity in the nutritious matter.

2^d There may be a difference according to the Aliment taken in. This however is less certain, the Animal Economy seeming to modify this very variously. It may also depend on the quantity of Aliment independent of quality. For as it is always applied in a fluid form, as more is applied, the greater proportion will there be of the Humidum.

3^d Much depends too on the progress in the growth of the Body, for the fluid part passes away whilst the solid is always accumulated. This explains the Debility, the Laxity & Rigidity of the Simple Solids at the different periods of life. A difficulty occurs here, that the further this goes on, the following accretion goes on ~~more~~^{less} slowly. We explain it thus, that the growth of our Solids is not by external adposition but by a fluid matter insinuating itself into the Pores of them. In proportion therefore as these become more rigid, this will find more difficulty in entering.

Ath It is influenced according to the various state of

of the powers expelling the Fluid part & condens-
ing the Solid. Two of these are the Temperature
of the surrounding Air, and the degree of Exercise
or motion of the Body. Thus Cold favours the
Concretion of solid Matter. Heat suspends it in
Solution & prevents such Concretion. This explains
then on the above principles why Animals are
so very small in cold Countries. But tho' Cold
expels Humidity it preserves Laxity, and will
therefore favour the Insinuation of nutritious Mat-
ter. Besides, the separation of the Humidity will
be much influenced by the Humidity of the
surrounding Air. Hence both heat & cold in the
extremes give Animals of the same species of
a less size than in the Temperate Zones. But
the largest size is not found exactly in the Mid-
dle of the Temperate Zones, but in the parts
inclining more towards the North.

How Exercise acts is not perhaps very certain-
ly known. Metals can, by hammering, acquire
a greater density. We may suppose the same
to take place in the motion of our bodies as giv-
ing a greater pressure.

5th There are certain powers determining the
effects of nutritious matter, such are the Original
Stamina which tho' greatly modified by the
above

above power cannot be entirely changed; what this depends on must be referred to the mystery of Generation; but it is such a power as determines the quality, quantity, & application of the Nutritious matter. But further, the proportion of the Humidum being given, much depends on the nature of the Siccum. Dr. Gaubius is mistaken in considering this merely as an earth. There may be a larger proportion, but neither is this the basis, nor doth the force of cohesion in all probability depend on the Proportions of it.

He dwells too much on the Apposition of foreign matter, without considering the difference of matter, independant of the proportion of Humidum & Siccum. But we know so little of the Animal mict & its changes, it does not admit of much application. So we shall be content with making it out as a general head of the System, tho' Gaubius goes further, & assumes several suppositions, which may perhaps be true but may be also false.

We come now to the 2^d head. Amongst these Powers we may reckon Heat & Cold, which modify the Laxity & Rigidity of simple Fibres. But still there are other powers independant of the matter of the Fibres themselves, and these are such as affect the motion of the parts on each other. A
certain,

of formation, but it is such a force as determines
 the quality, quantity, & disposition of the substance
 matter. But further, the proportion of the substance
 being given, much depends on the nature of the
 matter. The substance is sometimes in a condition
 the matter on one hand. There may be a large
 proportion, but neither is this the same as the
 the force of labour in its production, which on
 the proportion of it.

The matter so much on the production of force
 matter, without considering the difference of matter
 independent of the proportion of the substance & labour
 that we know as little of the labour as we do
 of the matter. It has not a kind of matter & labour
 to the force to combat with making it not a
 general head of the labour, the substance given for
 then, the substance is not a labour, which may
 perhaps be true but may be also false.

The force is the labour & the substance
 power in any certain amount of labour, which may
 the easily distinguish of matter & labour. But the
 there are other forces independent of the matter
 of the labour & the substance, and there are such as
 affect the action of the force in such a way as

certain degree of laxity in the Ether between the parts, & the different proportion between this and the Exterior Ether will alter the Elasticity of Solids greatly, if we consider the matter in the view we before gave of Cohesion. Both flexibility & elasticity require such a motion. This will, first, be more or less according to the Flexion or Oscillation to which any part has been exposed; for the flexibility of flexible parts is always improved by Exercise. The effects of this in the human system have been sufficiently noticed. Thus we observed that a part becomes rigid if not exercised: This reason however is not exactly apposite, for here Muscular fibres are concerned. But it takes place in parts where there is not such a particular Organization, as in Tendons and Ligaments. But the Flexibility of these parts depends on their organic structure; so that the rigidity in these cases too doth not depend entirely on the rest of the Simple Solid. A more remarkable proof of this is, that a Fibre capable just before of Oscillation, if kept long in an extended state, on removing the extending powers doth not now shew Contraction.

On the whole then it is obvious, 1st That as Flexibility and Elasticity depend on the Mobility of parts on each other, so this Mobility depends much on the

certain degree of liberty in the other between the
 parts, & 169.
 the relation of the parts with the liberty of the
 parts, if we consider the parts in the same
 degree of liberty. But the liberty of the parts
 requires such a relation. The parts must be
 the according to the relation of liberty. It is
 any part has been referred; for the liberty of the
 parts is always improved by freedom. The parts
 of the human system have been sufficiently
 noticed. This is not intended that a part become
 part of not necessary. The system however is not
 exactly appropriate for the human system and the
 parts. But it takes place in parts where the
 is not such a freedom of organization, as in the
 parts and organisms. But the liberty of the
 parts requires on their organization, and
 that the liberty in the parts be not not
 contrary to the end of the system. It is not
 incompatible of the parts, but a liberty of the
 parts of organization, if kept free in an organized
 state, on preserving the existing power of the
 parts and organisms.
 On the whole, then it is obvious, that as the
 liberty and necessity of the parts are the
 parts, in the liberty of the parts,

the motion to which they have been accustomed, and accordingly Flexibility and Elasticity are much improved by Exercise. In all Flexible & Elastic Bodies, the stretching act less forcibly according as the body is more stretched. Thus double the weight will not stretch a Cord twice as far as the original weight; and the power extending the Cord must always be increased, in proportion as the Extension is further carried on. So the Constitution & Composition of a Fibre being given, & the Mobility of the parts on each other, the Tension or Laxity of the part will depend on the stretching powers.—

Our Solid parts are stretched, 1st by stretching powers applied to their Extremities, & the whole of the Animal body is so connected that the Tension of the parts is communicated to each other, & this extends over the whole System. Hence in every strong effort we in some measure bring the whole body into Action, in order to give a proper Tension to the whole. Further, it is peculiar to the Animal System that it contains Tubes distended with Fluids circulating through them. The state of the Tension of these Vessels from their connection with the surrounding parts has a considerable Influence on the

150-169

the Tension of the whole System. Further, the nervous power impelled in different proportions to parts must be another great cause affecting the Tension of the System. But further, there is reason to think that there are particular passages for the Air thro' every part of the cellular Membrane. Senac, as we have already observed, supposes that there is a quantity of Air contained in every Membrane of the Body. This Elastic fluid probably varied oft in its quantity & elasticity from internal & still more from external Causes, and therefore must have great influence in determining the Tension of the whole System. There is reason then to think, that the state of the Simple solids depends more on this Tension than on the Materials of which it is composed, or any other circumstance. But further there are several other circumstances, external extending powers. Such are Heat & Cold which are said even to affect the Composition of the Fibre itself. But merely by acting upon the external parts & thereby varying their Tension, the Tension of the whole internal System must be also varied. Moisture & Dryness too, only as affecting the surface of the Body, will also affect the Tension of the whole System. To this we would refer the surprising effects of Cold & warm baths.

3. The Pressure of the Atmosphere, by its weight & Elasticity must act with great power in this way. Thus it enables the vessels to convey & reconvey their proper fluids. It is hard to say how so small an alteration as we see sometimes happens in the prodigious weight of the Atmosphere can produce the changes it does, but *Aqui libratum facile movetur.*

4. There are several other External causes, referred to by Gaubius under the obscure title of *Ambientia*. To all these we would add the operation of Emollient & Astringent Medicines. These as externally applied may be conceived as entering into the Composition of the parts. But this notion is embarrassed with many difficulties, and we have occasion to think that Emollients penetrate no further than the Cuticle (as was observed of moisture & dryness.) & act only by affecting the Tension of the external surface, & by that the Tension of the whole System.

But further, we were to consider Fibres as in a more Organic state: But it is plain that it is impossible to keep these two considerations entirely separate, tho' we have done it in a great measure. Anatomists now allow that most if not all of our Solids are of a Cellular Structure.

150-169.

Structure. It will then be obvious, that if this Cellular Texture is liable to any variation, it will greatly affect the Tension and Laxity of the System. Thus if a portion of Cellular Texture is interposed between the Pleura and external Membrane of the Lungs, it induces a degree of Rigidity there. Again, the Cellular Texture being given, the Laxity of the part will be increased accordingly as this is more filled with an inelastic fluid. This particularly happens if this inelastic fluid is accumulated so much as to over stretch the Parts. Further one of the most frequent causes of Rigidity is the increased density of the Cellular Membrane. — This too gives more Contiguity and therefore more accretion of the various Lamellae of the Cellular Membrane. —

This gives us the variety of Tension and Laxity in the different parts of Life. What has been here said of Cellular Texture extends to every vessel of the System. This finishes our consideration of the different states of the simple Solid, and of the causes of these variations.

Gaubius assigns another cause, the violenta partium destructio: this may take place, per:
happo

150-169

169-200

haps in the case of Tendons and Ligaments being torn. We cannot perceive that this admits of any application & it is not worth observing. These different States of Tension & Laxity must have great effects in diseases, and as they are capable of being directed to useful purposes by the Physician, their consideration must be of the utmost consequences.—

This finishes the Subject of the Simple Solid.

Morbi Solidi Vivi. Page 72. Par. 169.

We now proceed to consider the Solidum vivum; in doing this we must first consider the doctrine as delivered by Gaubius; but shall do it shortly.

He first gives us an Idea of a Solidum vivum, but his definitions run in a circle. A contractility that is excited by a number of causes not acting on any other part of nature is with him the vis vitalis. But we must add that acting as Elastic it doth not follow the same laws in this respect with other bodies. Thus in the Extension of other bodies, the Contraction is in proportion to the stretching power. In the Solidum Vivum this doth not happen. Instead of saying Occasiones

8

(a) Gambino had no occasion to observe as he does in his 179 Par. that Sense communicates with the Vis Vitalis; for Sense & Contraction are no more than modifications of the same nervous power in different parts of the System.

and not cause, we would rather call them parts of the cause. He is guilty of great impropriety in supposing two different faculties in the *Solidum Vivum*; for these are no other than the two different states of the Agent & the Patient in every action of Bodies on each other. This view however has given him the foundation of that division which we have before noticed & adopted. But we changed his terms & gave a different explanation of the *Facultas Sentiendi*, confining it only to those cases where the Thought is interposed. If we take in all the circumstances of the Impression & the State of Perception, his proposition in Par: 171 might be admitted; but this leads us to Confusion. In the whole discussion of *Solidum Vivum* Gaubius makes it to reside in the muscular fibre only, & very little different from Haller's *vis Insita*, which Doctrine we have before exploded.^(a)

From Par. 181 to 187 he enquires into the Nature of the *vis vitalis*, upon which part we have already made sufficient Observations. We agree with him that it is a *Principium sui generis*, but refuse that it is reparable
by

and not least, we would rather see them
part of the world. It is guilty of great
injustice in supposing two different forms
to be in the same manner; for there are
no other than the two different states of the
planet & the planet is every action of the
on each other. This view however has given
him the foundation of that opinion which we
have before noticed & adopted. But we should
be sure to give a different explanation
of the planet's position; explaining it not to
be a mere action the planet is in motion
from time to time the circumstances of the
position & the state of the planet; in fact
position is the only right to be adopted; but
this is not a question of mere words;
a question of fact; and the fact is that the
position in the planet is not a mere
different from what we have before explained.
There we have before explained.
From the 1st to 187. The position in the
planet of the planet is not a mere
and have already made a sufficient
there. We agree with him that the planet
from the planet, but upon that it is a question

by Aliment. We say that it is a subtle quod:
 :dam fluidum, sub ipsa concretionem inditum.
 It is indeed different from the matter of Electri:
 :city &c., but has an analogy to them and is
 only a different modification of the same kind
 of matter. This power must be liable to its vitia
 of Excessus & Defectus, and these vitia to be se:
 :parated from the consideration of the simple
 solids affections, from Organic affections, and
 from the affections of the fluids in the ordinary
 way in which they are considered by Pathologists.
 As to the term that of *να ορρωσα* is liable to the
 same Ambiguity as the term Nature which we
 have considered before as inclining too much to
 the Stahlian doctrine.

In Par. 190. he begins to consider the Na:
 :ture of these affections of the *Solidum verum*: he
 views them in too limited a manner and with
 some confusion of terms. He confines himself
 to the consideration of the moving Fibre and
 has therefore only Torpor and Irritability; but
 when he comes to define Irritability he makes
 it almost the same with Sensibility, & should
 therefore either throw away the Term Irritability
 or explain the meaning of the term Sensi:
 :bility —

But

But we must here desert Gaubius & consid. 48.
er the matter in our own view.

In the first place we consider the Nervous System as a whole where several parts have a communication in giving & receiving motion. In this communication we can perceive different degrees of Facility both in different persons & in the same person at different times. In this Facility we must conceive one degree in which health consists. This has undoubtedly some Latitude, but beyond it there may be an excess on either side.

(Whenever the facility considered in common to the whole, or in the proper proportion of the several parts would keep to the general terms of Mobility and Inertia. But in some parts we may perceive intermediate states that distinguish them. It is always the motion beginning in the Organs of Sense, & passing to those of Contraction. These have a certain proportion in which health consists. The motion from the Sensorium commune to the muscles being in proportion to that from the Organs of Sense to the Sensorium. But there may be a different degree in this proportion.

If the excess or defect of the Facility of Motion lies in the motion between the Organs of Sense and Sensorium, this is an affection of Sense

(a) What is here meant will be illustrated by considering by considering the difference between the Mobility & strength of a Bow.

Sense. If it is a motion from the Sensorium Commun: to the Muscles, this is an affection of Irritability, so in the Organs of Sense we call excess Sensibility, the defect Insensibility: in those of Motion, excess Irritability, the defect Torpor. With regard to the propriety of admitting this division a question arises about the Proposition *Contractio proportionata*; but this we have before discussed, and so need not enlarge upon it here.

We come now to consider the causes of these affections. Sensibility & Insensibility are the same with the mobility & Inertia of the whole. So Irritability & Torpor may in many cases be also the same. But other circumstances concur here. Thus the State of the Solid parts to be moved, supposing the mobility given, must have an effect on Contraction, and Increase or diminish Irritability. From this consideration Sensibility & Irritability must plainly be distinguished from each other. But further we must distinguish ^(a) Facility from Force; and the debility or strength of the Organ of Contraction is to be taken separately from Mobility. Debility often concurs with Mobility, and so may produce Irritability. As in Contraction there are different circumstances affecting it, so these will produce different effects from a suitable Cause

(6) The conditions of the Sensorium Commune, to be affected with Emotions may be considered as Sensibility; to be determined to action or volition as Irresistibility.

Cause applied. These however are too oft confounded with Irritability.

We have hitherto overlooked what passes in the Sensorium commune in speaking of the Facility of motion. We observed that what passes in the Sensorium may be arranged under these two heads Sensation & Volition. These are variously combined, and different in different cases. These are to be distinguished in the same manner as Sensibility & Irritability. Thus in the case of Fear or Anger. A man ^{more} affected with Fear is a person of Sensibility; he with Anger is a person of Irritability. In Irascibility we may observe a difference of Facility & Force. One man being very easily inflamed with Anger; another not very readily but with greater force. Whether any other simple Affection besides these, we shall not consider at present.

In considering the Causes of these Affections, we must enter into the Mysteries of the Nervous System. These Causes may be referred to these three heads.

- I. The State of the Nervous fluid itself.
- II. The proportion subsisting between ^{on the one hand,} density and Elasticity of the Nervous fluid, and the Tension and Rigidity of it's confining membranes on the other.

III. The

(a) The condition &c of the Nervous fluid therefore will likewise remain. But these causes can affect the condition of the Nervous fluid in a very slow & gradual manner. They are therefore seldom to be considered as in themselves inducing morbid states of the Nervous fluid tho' they may contribute to predispositions. Of the causes much more sensibly & suddenly inducing considerable changes of the Nervous fluid & consequently giving occasion to Diseases are first heat & cold.

I. State of the Nervous Fluid itself.

The Nervous Fluid like other Fluids may differ in density & Elasticity. These sometimes proportional but not always. Thus whilst the Elasticity of Ether is 700000 times greater than common Air, it's density is much less. In common Air whilst it's density is diminished by heat, it's Elasticity is increased. In the Nervous fluid we may suppose the Density & Elasticity in different States. The parity may give mobility, the Density diminish it. By the Analogy of other Elastic Fluids we may suppose the Density to be varied by the different States of the Matter in which it inheres, either the simple solid or more properly the medullary Fibre. This may be considered as the proper Stamen of the Animal body, and as the State of the simple solid will be correspondent to this, the Density of the Nervous fluid will depend on it's condition. We observed that the simple solid is varied in the progress of life, but this through the whole is determined by the original Stamina in some measure. (a)

The same may be said of the Nervous Fluid.
animal

Animal life depends on the Heat & Cold applied to it. It is equally probable too that it depends on the mobility of the Nervous fluid. It is therefore probable that the different degrees of heat will vary this & give a different state of Density & Elasticity. But there is in most Animals a power in themselves to generate Heat, so that they do not depend entirely on the surrounding Air. This ballance with the surrounding Air differs in different Animals, which makes it difficult to apply this doctrine to particular Animals. But this ballance being given, it is plain that Heat will give Mobility, Cold on the contrary Inertia. Besides, Heat & Cold affecting the Elasticity of the Nervous power, it is difficult to say what other external powers may do the same. We have formerly said that Sedatives & Narcotics probably act on the Nervous fluid itself, independant of the Solid matter. It is a Maxim in Philosophy that matter only acts on matter by contact. In the case of Sedatives there is a matter acting on a small portion of our Nervous fluids, whereas its effects appear at a considerable distance. This must either be by a propagated Impulse, or we must suppose the Matter to be insinuated and diffused in our Nervous fluid, and thereby capable

capable of acting to a considerable distance). As to the first we may say that from Impulse nothing but Impulse can arise. But as here is a Diminution instead of an Increase of Motion we are obliged to have recourse to the second Supposition. This is the foundation of the Hypothesis of Narcotics acting by being combined to our Nervous fluid.

But we must own that this is not a conclusive Argument, but like other Dilemmas may be a Sophism. All Impressions on our System are made by Impulse, and as this must act by encreasing motion, every Impression must be Stimulant. But we find that in the Sensorium commune a particular Modification gives sometimes a Stimulant sometimes a Sedative effect. This shows that it is not necessary in our System, that a motion produced should go on in producing Motions continually. But perhaps this may depend on perception alone, and be a Law of the Sensorium commune alone, not of the Action of matter upon matter. Yet we find that in the case of parts taken out of the body, Narcotics still preserve their proper effects; and this must be looked upon as the Action of Matter upon Matter.

It is probable that as Narcotics thus diminish the mobility of the Nervous fluid, so other Bodies may increase its mobility. This may lead us to
on

an Explanation of the Actions of other Poisons, whose Nature we are not yet sufficiently acquainted with.

II. The proportion subsisting between the Density and Elasticity of the Nervous fluid on one hand, and the Tension and Rigidity of its confining Membranes on the other.

We now proceed to consider the 2^d head of causes. To Oscillation of Elastic fluids it is necessary that these be more or less confined by pressure or otherwise, as the Nervous fluid is by surrounding Membranes. We observed before that the Density or Elasticity of the Nervous fluid, are in proportion to the state of the Matter to which it adheres. Tho' different proportions may give different Temperaments, yet they are not likely to prove Occasional Causes of diseases. Notwithstanding this, it is probable that this proportion is varied considerably in the progress of life. The Medullary Fibres seem to suffer little change, whereas the Cellular Texture and Membranes formed of it seem to undergo very considerable changes. The proportion therefore must change considerably.

In the first part of Life the proportion is on the part of the Nervous fluid. Afterwards the surrounding Membranes become more tense
(and

and rigid, and are an over balance to the nervous fluid. This is a general Idea, but to point out the Ideas of it is very difficult.

We are of opinion that at first the Aether is of little Density & Elasticity, but that the nervous fluid acquires this early in life. This may be at the time when Sensations and Memory begin. This is from 5 to 7 years of age. But the medullary fibre having thus acquired its proper state, is very little changed afterwards, whereas the surrounding membranes are greatly. We may suppose a time when both the nervous fluid and the membranes are at their highest degree of Perfection, and in the justest proportion. This is the apex of Life, after which Sensibility, Irritability & Strength diminish in consequence of the increased Rigidity of the surrounding membranes.

I shall only now attempt this general sketch of the matter. It will explain predisposing causes on several Occasions.

But besides there are Occasional causes affecting this proportion between the Fluid & surrounding Solids. The Elasticity of the Fluid in proportion to its density is greatly varied by heat and cold, and this may change the proportion between the nervous fluid and the surrounding solid, (the simple

Simple Solids). But Heat & Cold act the former more readily on the fluid; the latter on the Simple solid. If continued will probably act on both. The Action of heat & cold on the Sanguiferous System is an illustration of this; where it may act on the Fluids or Solids. Heat acts more quickly in rarefying the Fluid than the Solid, and therefore the effects of it as first applied are Rarefaction and Distension.

Cold acts more readily on the Solids, because they are more exposed to it, and because they are sensible. The same will apply to the Nervous System, and produce Sensibility and Irritability.

We come now to mention those powers that affect the Simple Solids. But there are scarce any other except those of Cold & Heat. But the Tension of the parts will have great effects, as before observed, and may variously modify Sensibility and Irritability. An instance in Van Swieten of the cure of the most remarkable degree of Irritability in a young Lady by Bandages applied round the body & limbs to give a proper degree of Tension.

As a want of Tension gives Mobility, so may an

an excess of Tension, for the more the Tension of the whole System is, the more will it be affected by any slight variations in any part.

III. The Causes affecting the Action of the Sensorium Commune.

We are now come to the third general head of causes such as affect the Action of the Sensorium Commune itself. Under this title we comprehend all effects of different States of the Sensorium that can influence the mobility of the Nervous power. 1. The communication between Impression & Contraction is only through the Sensorium, and therefore Contraction following Impression will be more or less easy as that communication is more or less free. The communication may be affected by pressure, not only ligatures on any Nerve, but by pressure on the Organ itself. This is observed in a great variety of morbid cases as stupor &c arising from Fluids variously accumulated in the vessels of the Brain or effused there. This leads to an observation or two not strictly connected with our subject.

I. It is difficult to determine to what degree this pressure proceeds. The occasion of this difficulty is that there occur complete Palsies oft, remaining

so for a long time in spite of all medicines used to renew the communication, and yet such cases have been afterwards accidentally cured, as by a fit of Anger. But the communication is not only not completely shut up, but a Nervous Influence is propagated to the Extremities of Nerves: for application of Stimuli, as of Electricity will excite sense and motion in these parts. This may lead to a supposition that the Nervous power remains long inherent in the Extremities of Nerves, after the communication thro' the Sensorium commune is shut up. Such a supposition would greatly affect the question, that the Nervous power doth not depend on secretion.

II. Another observation is, that oft in Palsies Sense remains when motion is lost. This leads to a conclusion that less Tonic power, less communication thro' the Sensorium commune is necessary to Sense than motion.

After this digression we return to our subject, and observe that Mobility may depend on the communication in the Sensorium commune being affected by pressure. Hitherto the Subject has only been considered in the case of diseases; we shall now consider whether in the Latitude of health there may not be such a degree of pressure
as

as to affect the mobility of the Nervous System.

By what Circumstances can we discern this pressure to take place? Anatomists have not observed in different persons a different proportion of Cortical & Medullary parts of the Brain, tho' it is very probable there is a difference. There is a foundation for some such Supposition from the Observation made upon large heads. The case of Infants affords another instance of this larger proportion of head to the rest of the body, and in them we know that there is a greater quantity of fluid sent to the Brain in proportion to its size. This may account for their Torpor and Stupidity. This excess of proportion in the Cortical part of their brain may prevent the too great degree of Sensibility & Irritability that might arise from their Medullary Fibres soon arriving at perfection.

Further, we find at different times of Life, and in different Temperaments a difference of Proportion between the Arterial & Venous blood. The Venous Blood in the head is not subject to muscular pressure, and its return from the Brain is conducted in a particular manner, so as to retard its progress.

(M)

We are led to think this is intended to serve particular purposes in the Economy. Hence the Venous Blood in the brain is liable to be accumulated, and thus in those with a larger proportion of it in the Brain, it will affect the Mobility of the System and give a particular Temperament. —

This Retardation increases in the progress of life, for then the Venous Blood is always in an over proportion to the Arterial. Hence the Inertia and Torpor of old age, and a man at that time of life is most exposed to soporose diseases.

Hence then the state of the sanguiferous system in the Brain may variously affect mobility and Inertia. But in the medullary substance itself, there is something affecting this mobility. It is probable that in different conditions the nervous power is sometimes more accumulated in the brain, sometimes more freely distributed to the whole System. The first gives Inertia, the latter mobility. This is easy when we consider that Inertia and mobility are only other words for sleep and waking. We must repeat here that from the Elasticity of the confining solids, the nervous power is resisted and pressed more to the Sensorium commune during waking, and if it was not for certain powers, would stagnate
in

in the Sensorium commune.

What are these powers? Two of them are sufficiently obvious. 1.st The Impulse of Arterial Blood at the basis of the Brain. 2.^d The Action of various external Impressions. The first is more constant & evident. We see that if the heart ceases to act, the functions of the Sensorium commonly cease. We may observe here that this is greatly prevented by a reclined posture. These effects are so sudden as not to be accounted for from the ceasing of a Secretion. Again, when the Impulse is a little more violent, it proves a Stimulus to the Sensorium. This then is probably what keeps up a Determination from the Sensorium commune to the Organs of Sense & Motion, keeping the Nerves full & confining Solids in proper order. This we call the Tonic power. The determined degree of it is regulated by Habit, and a diminution of that determinate degree gives Irritability, as the excess doth that other kind of Irritability mentioned lately.

It is difficult to apply this general doctrine to particulars. The reason of this is, that we do not exactly know the state of the Heart's Action, or whether a less frequent and fuller action is more powerful than a more frequent one. Now to consider

consider how far the distribution of the Nervous fluid depends on the Impulse of the Arterial blood alone, or whether in every diminished impulse in the Arterial, the venous blood in proportion stagnates, is accumulated, and concurs in compressing the Brain, & thereby diminishing the distribution of the Nervous power to the whole system. Though we cannot exactly determine the different states of the heart's action, yet it is necessary to enquire by what causes the Heart's action is increased. These are two, 1. *Influx of the Nervous Power*—2.^d *of the Venous Blood*. The heart has its Nervous power in consequence of the common Tonic power. Tho' more steadily determined to it than other parts, yet every variation of the Tonic power will probably affect this determination of the Nervous power to the Heart, and thereby variously modify its action. — Here then we see a connection of cause & effects, the Sensorium acting on the heart, and this again on the Sensorium.

The action of the Heart may be further affected by other causes independant of the Sensorium. For the Tonic power being given it is highly probable

able the action of the heart is varied by the state of the Blood.

The 2.^d general cause of the distribution of the nervous power to the system, is the variety of external Impressions. Thus we see that when the distribution is at a stand, and the action of the heart itself stoppt, heat & various other Impressions restore the Tonic power, and in consequence of that the action of the heart. These Impressions keep up the Tonic power, and in consequence of that the action of the heart. These Impressions keep up the Tonic power in the state of waking.

To reduce this doctrine of Impressions to general propositions.

As this distribution depends on Impulse, the Tonic power will be in proportion to the Impulse. If the Impulse is excessive the distribution may also be faulty in excess. But a moderate use of all the Functions tends to strengthen them.

2. The effects of Impressions are most considerable, *ceteris paribus*, as these Impressions are more varied. Thus impressions by engaging the attention can destroy the Sensibility in every other part of the System. To render the distribution more general it is necessary that the Impressions

Impressions be considerably varied.

3. If there are causes of Impression acting otherwise than by Impulse, as by affecting the condition of the Nervous fluid itself giving it rarity & thence mobility, these will be new sources of effects of Impression.

A. The Effects of Impressions will be in proportion as they are attended with reflex Sensations. How far this is modified as the Impression is attended with Agreeableness and Disagreeableness is difficult to say. The effects will be greatly varied according to the different degrees before given of each. On the side of the disagreeable we can see there are distinct Genera; The simply disagreeable, the Uneasy, and the Painful. Of the simply Disagreeable, those opposed to them are what we call the Pleasures of the Imagination. These give an increase of Sensibility with regard to the object, and moderate agreeable Impressions prove a Stimulus to the System. But as they are moderate they seem never to give Irritability. The Agreeable opposed to the Uneasy we spoke of very fully before, and shewed it to depend on the fullness and steadiness of the Tonic power. These give a Sensibility to objects of the same cast. The Uneasy Impressions give a Sensibility, but to objects also of the same

same nature, and in consequence of that too a particular Irritability to the same. The pleasant Sensations opposed to the painful, by occupying the Attention destroy Sensibility. But when the Impression is gone, it leaves the body relaxed, sensible, and irritable in proportion to its degree. —

Bodily pain hath determinate effects according to its degree both when present and past. When present it gives both Sensibility & Irritability, but this is limited according as it engages the Attention. But as pain has power of determining to the System in general and to particular parts, it increases Sensibility & Irritability. How it produces Syncope and even Death is not known, but it may be supposed to produce its effects by determining the Nervous power to one part and leaving all the rest destitute. Hence when past it produces Atonia and Torpor.

This is a general view of Pleasure or Pain giving Sensibility or Irritability according to their degrees. We might go on to shew how these are modified as attended with Propensities, Appetites, & Passions of the Mind. But we are too Ignorant of the Action of the Sensorium to discuss this subject properly. We see that a particular state of the Body follows particular states of the Mind.

This

This Subject will be resumed in another part of our Pathology.

We go on to observe that Stimulus acts by causing a Determination of the Nervous power to the part to which it is applied. The Tension of particular parts may depend on Habitual Stimuli, and so the want of these may leave the part more lax, sensible, and irritable. In the Blood vessels a Stimulus applied excites the Action of the vessels to a certain length; this must be attended with increased Impulse, which will increase the Tension & hence the part acquire Sensibility; hence Inflammation may give Sensibility to parts not before possessed of it.

Further, by Repetition Sensibility is diminished, Irritability increased. Habit determines the order in which Actions succeed each other, and also the force and velocity with which they succeed each other. Hence a particular Equilibrium will be constituted between the parts of the Nervous System. A change of this order then disturbing the Equilibrium, will give effects of Irritability. Hence we see why every new & strong Impression is so irritant to our System.

It might be of service to give another Head of Sydenham's Ataxia; but this we cannot prosecute at present.

This

This finishes our consideration of the effects of the Sensorium commune; we shall not, like Gaubius, consider here the general effects of these Affections; but proceed to consider with him the Morbi Solidorum Continentium.

Morbi Solidorum Continentium. Page 200.

Physiologists after considering the Affections of the Simple Solids, proceed to consider them as adapted to particular functions, or the Morbi Instrumentales. Yet in doing this they consider the Solids only as so many Masses without any respect to the Functions they are intended to serve. The Division of the Morbi Similes and organici amongst the Antients was less improper, as under the first they only considered the Matter of which our Solids consist. But as here handled this part doth not properly come in here, as not tending to throw any light on the Proximate Cause, which is the chief purpose of this part of Pathology. —

Accordingly Dr. Gaubius himself observes that these Vitia do often times not at all disturb the function, and that they are rather to be considered as effects or symptoms, which is really the case.

WB

We shall therefore pass over this whole Chapter of Morbi Solidorum Instrumentales, as they are rather to be referred to Anatomy, and would lead us far from our purpose. A part of them will come in more properly to be considered under our Symptomatology.

Morbi Solidorum Continentium
sunt vel.

I. Non Continentium

1. Intra Modum

A. Per vim distendentem auctam.

a. Congestâ uberiore mole.

β. Volumine expansione aucto.

γ. Impedito Trajectu.

δ. Impetu Avectorum enormi.

B. Ob vim continenlem imminutam.

a. Laxatis Membranis.

β. Ruptis quibusdam ex pluribus.

γ. Fulcimento Ablato.

2. nequaquam Continentium sed Imittentium.

A. Per Anastomosin.

a. ob causas I. A. B.

β. Ob Sphincteres resolutos.

B. Per Diæresin factam.

a. Vi Mechanicâ externâ.

β. Ruptione a distendentibus quæ (pneum.)

γ. Erosione quæ (diapnoë)

II. Non Transmittentium qui Obstructio.

1. Absoluta.

A. Per Obturationem.

a. Per Materiem indigenam in vasa non sua impulsam, qui Viror Loci.

b. Per Materiem indigenam degeneram.

γ. Per Materiem alienam.

δ. Per partem intus susceptam.

B. Per Angustationem.

a. Ob Crassitiem Parietum auctam.

b. Ob Compressionem externam.

γ. Ob Collapsum.

δ. Ob Contractionem.

ε. Ob Coalitum.

2. Relativa, cum plus infundatur, quam quod eodem Tempore transmitti potest.

In

In the Series of Proximate Causes the State of the Conformation of the Internal parts has great Influence, and therefore may properly enough be considered here. (Vide Table above.)

Gaubius has done this in his chapter of morbi Solidorum Continentium. He observes that these Cavities have their particular sizes, which if they exceed or fall short of, Diseases may arise. This division is not correct, thus for instance in D

this cannot be considered as a difference of size.—

Of the increased size of Cavities he makes 1 species. He ought to have divided the morbi Solidorum Continentium into two kinds.

I. Those which contain their fluids imperfectly, which gives the dilatation of Gaubius, and

II. where they do not contain the fluids at all, under which his 3 other species are to be ranked.

Dilatation is of two kinds, 1.st where there is a greater impulse on the sides of these Cavities. 2.^d where the sides themselves are weakened, the Impulse being the same. There are 1 causes which may give rise to the first of these Species of Dilatation, as we find them in Gaubius. To the 2.^d head belongs two species, 1.st where the sides are weak in themselves. 2.^d where they want certain Fulcra, which they are ordinarily provided

provided with.

Of that head of Diseases, where the vessels do not contain the fluid at all, the first is Anastomosis. This may have causes of two kinds, 1. All those that are causes of Dilatation. 2. Where the Orifices are provided with Sphincters, & a Resolution or Palay of these Sphincters takes place.

Next follows the Diapedesis: but it is doubtful whether this has any place in our System. It proceeds upon the supposition that a great part of our system is composed of regular Fibres interwoven with each other; whereas we before shewed that it was highly probable that the chief part if not the whole of our solids is composed of cellular Texture. The only doubt that arises is with respect to certain muscular Fibres. There are instances of the Heart's being found very thin, but this perhaps is owing to another cause. But the whole of this consideration admits of no application, so Diapedesis may be omitted altogether.

The Diæresis which next follows is of three kinds, 1. When it arises from external mechanical force giving a solution of Continuity. 2. From a preternatural Impulse of the fluids. 3. From Erosion. These several cases of the *magnitudo Aucta* of Gaubius. In par. 207. Gaubius considers the effects of these affections, but these too to be referred

referred to the Symptomatology.

Next follows his Morbi Augustia. Here we particularly find the bad effects of his not considering these affections with respect to their Functions. For Impeditus Traiectus, we would use the term Obstructio; this is properly divided by Boerhaave into two kinds; 1.st where the fluids become unfit to be transmitted. 2.^d where the Cavities are unfit to transmit the fluids, the last of these properly belongs to us, and is called the Obturatio. This is of 4 kinds. 1. The famous Error Loci. It is much disputed whether this takes place in the Animal System. Reasons against it are, first, that discovered by Microscopes, that if a particle of Fluid enters into a conveying vessel, it is impracted there for some time, but soon the Elasticity of the vessel exerting itself repels this particle. Secondly, Air vessels in their ordinary size may be unfit to Transmit particular fluids; but they are of that Sacity as easily to admit of Dilatation, which will prevent this Error Loci becoming a cause of Obstruction.

The 2.^d Species is where the Fluids become changed in their nature, being now justo tenaciora. The Subdivision of this is to be considered hereafter.

The 3.^d Species is from a Materies Aliena, either generated in the Body or introduced from without.

Gaubius

Gaubius adds properly a 1th The Intus Susceptio, of which the chief instance is in the Alimentary Canal.

The 2^d Head of Obstruction is where the Canals become unfit to transmit the Fluids. Gaubius reduces these to 5 heads. 1. Obliteration; This is that straightening of the Canal arising from the sides of the Canal being changed. Next follows Compression, which may be of various kinds; Tumours in the neighbouring parts; Hard pieces of Bone thrown out of their place &c. &c. The next cause of diminished capacity of the vessels is the Collapse, when a hollow cavity has its sides falling on each other, which always supposes a degree of Raridity in the parts.

In what parts of the System can this occur? Probably never in the Arterial System, for tho' these vessels contract it is regularly in their whole dimensions. Neither can it happen probably in the Alimentary Canal. In the Venous System too it scarcely occurs in the smaller veins, in the larger veins it doth in some measure. When will it have effect in producing proper Obstruction? Of itself it scarcely can, because, 1st it will yield again to the impulse of fluids poured in. Two other circumstances are requisite, that the Fluids do not follow in, or that external

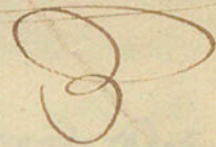
external compression prevents it from yielding to this impulse, or that the two sides grow together. Contraction is more considerable where vessels by their natural contractile power are brought to a smaller size, so that they do not transmit the Fluids at all, or in too small quantity. Gaubius divides the causes of this into 3 heads, but how the two first differ we do not perceive.

It is matter of question in what cases the *vis elastica* or *vis vitalis* takes place. We can imagine that the Elastic power in our Fibres may be increased in a particular part of the System by whatever increases the Cohesion of the Parts, with their Mobility on each other. It happens indeed in the whole System in the Course of life, but not in any particular part. Contraction then must rather be referred to the *vis vitalis*. ~~We don't know~~ what Gaubius means by saying that the *vis elastica* may prove a Stimulus to the *vis vitalis* and thereby induce Contraction. Perhaps he had an eye here to the causes of Inflammation.

The last cause is the *coactio*, where the cavity is filled up with some matter produced from the Growth of its own sides. ^{There are} two parts of the body naturally disjoined, which, if brought into contact and kept so for a time, do not grow together.

together. Whether it is a portion of Coagulable Lymph, or other such matter in the Cavity, disposed to form itself into a Cellular Texture, or Cellular Texture is sent off from the Sides. But in either case this Coagulus cannot be a primary affection, but must depend either upon external Compression, or on Contraction continued for a long time. Hence this is excluded by several Physiologists.

Vide Table for Morbi Solidorum Instrumentarii,



[Faint, illegible text from the reverse side of the page, likely bleed-through from the next page. It appears to be a table or list of medical conditions.]

I. Cohæsiō vitiosa.

A. Absoluta - Continui solutio.

α. Fractura.

β. vulnus.

γ. Continui solutio sicca.

B. Relative - Nexus Incongruus.

α. Nexus lacosus peccans.

β. ——— defectu peccans.

II. Collocatio perversa.

A. Luxatio.

α. Dearticulatio.

β. Subluxatio.

γ. Symptomis solutio - quæ nexui potius tribuenda videtur.

B. Flentia, quæ variè distinguitur.

α. Pro ratione sedes.

β. ——— partium lapsarum.

C. Procidencia.

D. Aberratio.

III. Numerus vitiosus.

A. Numerus excessu peccans.

B. ——— defectu peccans.

IV. Confirmatio vitiosa.

V. Magnitudo.

A. Excessu peccans, quæ Enormitas.

B. Defectu peccans.

Morbi Fluidorum. Par. 265.

Passing over the Morbi Solidorum Instrumentarii for the reasons above mentioned, we now proceed to the Morbi Fluidorum.

The Bulk of the Human Body consists in a great measure of Fluids, and the condition of these not less necessary to the several functions than those of the Solids.

In 267. Par. Gaubius meets with a difficulty in treating these as diseases. This we have nothing to do with as we consider them with a view to Proximate Causes. The fluids may either be considered absolutely in themselves, or with a view to the Solids. This gives the *vitia Absoluta* or *Relativa*. Fluids differ from Solids, but only in the degrees of cohesion between the parts. But in the Fluids themselves there are various degrees of cohesion which deserve our notice. Gaubius therefore begins with considering different degrees of Fluidity. He considers all deviations as affecting the whole fluids, or only particular ones. This occasions some confusion. The consideration of these deviations in general will be little understood, till we apply it to the case of particular Fluids. We shall however follow his order in this respect. Instead of the Morbi Coherentiae, & Acritates

Acritates Morbose, it would have been better to have considered the affections of the Fluids, as the Affections of their Aggregation, or of their Mixture. The vicia Coherenticæ may either be in defect or excess. But these conditions, he says, may either take place in the whole of the Fluids, or in particular portions of them; but this last comes to be considered hereafter. Do Deviations in this respect occur so frequently, or are they of so great Importance as most Pathologists have supposed? We think they do not, for Nature has provided means to prevent these Deviations from going to any great degree, as we shall show in another place.

We must begin with considering the causes of Fluidity in our Fluids in the Abstract. All Fluidity according to Gaubius depends on a Fluidum primum. We suppose this to be a very false Idea in Philosophy. At present it is the common received opinion that fluidity depends on the quantity of Æther in bodies, which comes ultimately to Gaubius's reasoning. But this Æther is common to all Bodies, and the difference of Mixture depends on the different proportions of Atoms, there being no body in nature properly humid or dry. We have no reason to think that water is naturally Fluid, or Gold naturally solid. Two solid bodies put together may become fluid, and much oftener two fluid bodies put together become solid. — The

The conclusion then of Dr Gaubius must be rejected.

We may admit that the greatest part of our fluids is water, and that the fluidity is, *ceteris paribus*, in proportion to the quantity of water. But a different Fluidity also arises from the mixture of the solid, according to the diversity of the Ingredients. This however contradicts the proposition Gaubius set out with concerning Fluidity. A small quantity of Saltpetre will give viscosity to a large quantity of water. Some of the Farinacea do this in a less degree. This shews that the different conditions of the solid influence Fluidity.

Gaubius goes further, in supposing these Ingredients to be earthy, phlogistic &c. But there is no reason to believe that these have any inviscating quality. Gaubius hints also at a *Mucosum quiddam* as occurring in our fluids. We have already observed that we have no evidence of any such matter being present. The proper proportion of these, with the conditions of motion and heat give the proper Fluidity. Motion assists also in diffusion, Heat is a principal Instrument or means of Fluidity in our fluids. But Heat only relates to Bodies in solution. With regard to mixts it may seem to increase their action, but this probably is owing only to its effects on solution. But as the heat of the human body is very determinate and doth not admit of much latitude

laxitude, it cannot occasion any great difference in the Fluidity of our Fluids. At least it doth not act much on the Aggregation of our Fluids.

A Question next follows whether Fluidity is owing to any particular Form of the particles of our Fluids. Boerhaave supposed that the Action of our vessels gave a degree of Rotundity, wearing off all Angles, and giving a proper Spherical form which is the foundation of fluidity. We do not know the particular form of the smallest particles of our matter, nor the Causes which can influence or change these forms.

Gaubius next goes on to divide *Spissitudo & Tenuitas*. *Spissitudo* is of two species. 1.st depend on the defect of fluid parts. 2.^d On the excess of Solid parts. The defect of fluid parts may be either owing to the want of a proper supply, or to their after separation again. We would observe here that a morbid *Spissitudo* induced by any of these causes is very rare.

If the fluid part of our Aliment is in an inferior proportion, it may either have the effect of diminishing our watery secretions, or by that of preventing the separation of the saline particles of our Fluids.

The *Auctiores Lymphaticae Secretiones* too by producing Thirst, prevent the bad consequences that would otherwise arise. But this seldom happens in the whole System, and if only partial the Secretion is diminished in other parts. In Dropsies too there

there is a sensible diminution of secretions, which compensates for the want of the proper Proportion of fluid parts that might otherwise occur.

Further, it is very difficult to find when such a morbid Spissitudo doth take place. The consequences of Dropsy do not seem at all deducible from this Spissitudo.

As to the 2^d Species of Spissitudo, it is very manifest that there will be a great difference in this respect in different persons, according to their diet, Temperament, way of life, sex, &c.

We have before refused the existence of the Gluten Iners, so have no occasion to follow his reasoning on that head. He is willing here to support the Pituita frigida of the Antients.

What next follows is still more subtle; but, with regard to the doctrine of Elementary parts we have spoken fully before. All these matters mentioned here must be so much changed by the solution and Fermentation they necessarily undergo in the Alimentary Canal, as not to be able to occasion any change in the Consistence of our Fluids.

The general Effects of Spissitudo here given are chiefly Obstruction.

Excess of Humidity is divided into two general Heads. The first of these, when the watery parts are in over proportion. The causes here adduced are generally just. Some doubt whether the warmth or coldness of the Liquids taken in can have any effect

effect. It cannot have any beyond the Stomach, but there cold drink acts as a Stimulus, and maintains the System in a more healthy state, whilst warm drink relaxes the Stomach, and in consequence of that the whole System.

A curious question arises here; How far Bathing increases fluidity? Where the Perspiration is languid the Body becomes a kind of Sponge, and assumes a great quantity of Humidity. In the other cases it will scarcely have any great effects in this way. (This ^{was} afterwards acknowledged by the Doctor to be sometimes a Cause of Senuity of our Fluids.)

How the Evacuaciones Nimiae should act this way is difficult to conceive. It would seem that there is some inaccuracy here, and that effects are here confounded with causes.

In the 2^d Species depending on particular Ingredients we do see that a large proportion of Saline matter in the Serosity, will make it dissolve a greater quantity of Coagulable Lymph, and thereby give more fluidity. The causes of this will come in more properly elsewhere, and we shall not stop to take notice at present of these effects.

The Acritates Humorum Morbosa we chuse rather to consider as the States of the Mixture of our fluids.

We would refuse that Blandities is a general quality of our fluids. The common mass has always an Acid matter to the Taste. Several of the Secretions are naturally very acid. Many of these Secretions are afterwards too absorbed into the Common mass. But it is enough for us that our System is insensible to certain acrimony. Accordingly we suppose that this happens in the Inner surface of the blood vessels, which are not sensible to certain Acrimonies. The Secretion of Urine is oft stop'd after its Secretion, and this Acid matter oft circulates for a considerable time in the common mass without shewing any marks of Stimulus.

What follows on the subject of acrimony we have already taken notice of, and given our Opinions concerning it. Gaubius next divides Acrimony into Mechanical & Chemical. Before entering on this he considers by what powers our System is defended from this Acrimony. These he refers to 4 heads. 1. The Blandness of the Aliment taken in. But some Acrimony is taken in this way. The 2^d power is that Nature has provided the prima via with a certain Sensibility that operates by throwing out the offending matter. As to the Contraction of the Absorbents, this is merely a supposition not proved by facts. Many Acrimonies undoubtedly enter

enter the prime vie, & thence the Lacteals, and appear in different parts of the System. Another Supposition may be conceived, that these Absorbents have an Elective Attraction to certain particular matters. But perhaps whichever of these Suppositions we adopt it may be probable that certain matters may escape this Sensibility or Elective Attraction, by being intimately diffused and blended with the Chyle. If Acrimony gets into the common Mass of Blood notwithstanding these powers already mentioned, Nature has still provided other powers to guard against the Acrimony. It is probable too that the Animal Oil is absorbed on these occasions to serve the same purpose. The Acrimony introduced can only be in small quantity, but little of this enters the Lacteals, where it is diffused with the whole Lymph, & afterwards with the common Mass of Fluids —

But further Nature has provided several Secretories to take off that portion of our Fluids which is likely to associate itself with foreign matters. Hence we should be very cautious of admitting Acrimony in our System.

The Boerhaviens have supposed also a mechanical means of preventing Acrimony by the changing the Angular form of the particles into a

a Spherical one.

The Sources of Acrimony are two. 1.st A foreign matter introduced into the System. 2.^d An Acrimony produced in our fluids. The chief Causes of this according to Gaubius are excessive Motion of the Fluid joined with the natural process of Fermentation. Another cause is directly opposite, viz, the Stagnation of the Fluids, whereby something is kept in the System that should be thrown out. Further a defect of any of the Functions intended to correct or expell Acrimony will necessarily be a cause of it. The chief effects of such Acrimony are Dolores Pruritus, Convulsions, &c. vide Par. 306.

Still however these may rise from other causes and are not always to be referred to Acrimony alone. But further, Gaubius goes on to observe, that particular fluids are liable to particular degeneracies. The begins with Acidity. This chiefly prevails in the *primæ viæ*, and it may be doubted whether it ever exists in any other parts of the System. No Observations shew that a Fossil Acid has ever been introduced into the System, so as to prove a Cause of disease. We have therefore only to consider the vegetable Acid. The defect of some of the Assimilating powers must be the cause of this appearing in its proper form in the *primæ viæ*, and producing a morbid Acidity.

Acidity. Thus the fluids may not be supplied in proper quantity as much as required, or not rightly blended with the Aliment taken in. Or the Stomach perhaps may not evacuate itself suddenly enough. All these may arise from a debility of the Stomach.

In pointing out the effects of Acidity Gaubius enters into a Chemical Reasoning, founded on very doubtful principles. Every view we take of our fluids leads us to believe that every addition of Fluids to this Acrimony tends to prevent it, and that there are particular fluids particularly opposed to it. All this leads to the supposition that Acidity never appears in its proper form beyond the *prima via*. Our fluids probably consist of different Ingredients according to the Nature of the Aliment and the state of the Assimilating powers; and this difference may give a particular character to our fluids. But still we ought to be very cautious in assuming what is the particular state of our fluids, and deducing the causes of diseases from thence.

Gaubius adds that an Acerb Acrimony may also be generated. It may be so, but how it is generated, or how it may produce the effects ascribed to it, is a very dubious piece of Theory. The Acrimony of the ^{volatile} kind might appear probable but we are still dubious about it. None of the causes assigned for it.

it seem likely to produce it.

Whether an Alcalescent state in our system is analogous to the same in Vegetables, or only inclining to Alcalescency or putrescency we have spoke of before. We marked out the more distinguished steps of the fermentative process, but there are several intermediate ones which we have not noticed. What may be the state of the fluids in these intermediate states, and what effects it may have in producing disorders, we are little acquainted with.

A properly putrid matter is capable of promoting our natural fermentative process in our system, & assimilating greatly in a short time. wherein the various Acrimonies consist & what state they induce we don't know, and confine ourselves to general terms. We cannot therefore follow Gaubius in his reasoning on this subject, where he endeavours at an explanation.

Tho' the Alcalescent state takes place it very seldom happens that a proper Alkali is detected in our system, even when every circumstance has occurred that could form its evolution. It has been supposed that the application of Alkaline salts will decompose the Sal Ammoniac within us, & give a Δ . But it is very doubtful whether this ever takes place in reality.

Dr. Hucsham has supposed that the use of Alcalescents

Alcalescents may induce an Alcalescent state in our fluids. But if we consider the quantity of fluids taken in at that time, their being introduced in such small quantity &c, we cannot conceive that they ever decompose a Sal Ammoniac. They more probably act by diminishing the quantity of Acid that might be found in our fluids. Neither do we know that any poisons are of such a nature as to give occasion to the Evolution of O^{a} — i.e. a volatile alkali.

With regard to the Putrid Diathesis, a putrescency doth take place, but whether the putrid state consists with regard to the Saline & Oily parts, is not known. We can allow the more general Foundation of it, but in what circumstances it is owing to one or another cause we are much at a loss to determine. How two directly opposite Causes should produce the same effects is hard to explain, but founded on fact. There is a certain Evolution of some Effluvia, which if carried away to the surrounding air no Putrefaction ensues; But if this stagnates on the surface so as to be allowed to be re-assumed this will give occasion to Putrefaction. This appears in the perspirable matter on the surface of the body, and still more in that from the Lungs. Whether this Mephitic Air acts as a Poison is not certain from Experiments, tho' it appears very probable —

En

In giving the general heads of Putrid Acrimony, we want a distinction of the several species of putrids. Gaubius then goes on to consider the Murialic Acrimony. No Chemist has yet explained what is the effect of the Common Salt we take in with the greatest part of our Aliment; or what is the Cause that this matter is so hurtfull to certain Animals, so beneficial to others. It is therefore difficult to say what are its effects in us.

The Sea Scurvy is by many supposed to be in part owing to the Common Salt, and contrary effects have been imputed to it. We may admit in general that all Saline matters give a Tenuity to the fluids, render them more Acid, and may in several parts of the system prove Stimuli. But whether they induce Putrefaction, and give rise to the several Phenomena of Scurvy, we can by no means determine. We are of opinion that this Murialic Acrimony occurs very rarely. —

The Ammoniac Acrimony we may more readily suppose, this being a natural consequence of the putrefactive process. This will account for several of the Phenomena of Scurvy tho' not perhaps for all. Yet the Serum of Scorbutic blood has proved Antiseptic to other putrid matters. —

Besides

Besides these Acrimonies which are the chief, there remains others not yet noticed.

Gaubius next proceeds to another consideration which is properly introduced first by him in Pa: thology. We see that the particular matters of which our fluids consist may separate from each other. But there are two kinds of secession which Gaubius confounds together; the secession of matters be- fore joined by diffusion, and those joined by solution. — with regard to the first he supposes it of two kinds.
1. The secession of watery parts from a too small ^{quantity of} consa: mentum, or;

2. From

It is probable that both these take place, tho' hard to say when the one and when the other prevails. In general there is a secession of the Red Globules & Lymph from the Serum, but sometimes also there is a separation of the Red Globules from the Lymph. We know that this takes place too within the System. We therefore suppose that there is a particular condition of the fluids disposing to this or that secession, but don't know what these conditions are. This will be resumed in another place.

With regard to the secession of Coagulable Lymph, Gaubius supposes it to be of different species; but we

we do not know what foundation there is for doing so. It is in that species which he imputes to earthy matters, that he chiefly confounds the secession of matters before joined by diffusion, and of those by solution.

Our Fluids are to be considered in three different states, as Chyle, Blood, and various Secretions. This is the view Gaubius takes of them. —

Chyli Vitia. Par. 323.

Nature has used various means for Assimilation, so it is difficult to conclude from what appears in the *Prima via* to what actually prevails in the system.

There is no proof of the Acid Acrimony prevailing in the Chyle. We are inclined to doubt of some of the causes assigned of it. The Effects of Acidity in the *Prima via* are very justly marked out, but not certain that it extends any farther. —

Next follows the Alcalescent Acrimony. Putrid Ingesta may have this effect in the *prima via*, but more commonly it appears in the Stomach in consequence of the Mass of Fluids being first affected, and these putrescent humours being poured back on the Stomach —

H

of these external causes the Bile seems chiefly to be in fault.

The next kind of Acrimony mentioned is Transcendence. This is not so liable to happen as Gaubius thinks, nor can all his causes be admitted here. — There are such provisions in the *prima via* either to assimilate these matters, or to prevent their being admitted by the Lacteals.

The same may be said of the viscosity which next follows. Some of the effects ascribed to this are very improper, as the Vomiting ofropy Phlegm, which is nothing more than the Mucus lining the Stomach. As to the other effects too they must be rare, as the causes are rare.

Hitherto Gaubius has considered the affections of the Chyle according to its mixture; he now proceeds to consider the different proportions of its Ingredients, which probably do not take place and influence the Fluids of the System. But it is very difficult here to condescend upon particulars, or to point out either the causes or effects of these different proportions.

With regard to the Oil, we before endeavoured to shew, that it is rather dissolved than diffused in the Chyle, which would prevent any such Secession as Gaubius assigns for the Cause of Obesity.

Sanguinis

Sanguinis Affectiones. Par. 332.

We now proceed to the Sanguinis Affectiones. The first part of this section we have already touched upon, it being purely Physiological. It is probable that a certain proportion of the several parts of the Blood is requisite to health, but this will admit of a certain Latitude. We know the excess of Serum will give fluidity, and it is highly probable that excess of Coagulable Lymph gives Tenacity. But what are the effects of an excess of Red Globules, or in what cases it takes place is very uncertain. Dr Haubius's reasoning here is not to be admitted; for in the first place he goes on the supposition of these being *Dirty* bodies; and even if they were, the conclusions he draws are very Erroneous. There is no proof that Oil is sooner heated or cooled than other Bodies. We can allow that in the Leucophlegmatic habits the Serum is in over proportion; but that in the melancholic there is an over proportion of Coagulable Lymph, or that the Sanguine is a just mixture of the whole is very uncertain. In the Serum it is obvious, that water may exceed in proportion.

As

As to the 2^d Cause, we don't know that it exists, 95.
at all in the System. The want of Tenacity is nothing
more than the want of Coagulable Lymph in it,
and therefore comes under the affections of that
part of the Blood.

~~Lect. 88~~

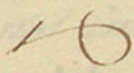
Dr. Gaubius next considers the Morbid States
of the Red Globules. We know nothing of these
except their Immiscibility with other parts of the
Blood, which gives them a determinate size, and
therefore we cannot say much of their Morbid
States, or the Causes of these. The Causes too of the
colour of these must be much concealed tho' Gaubius
enumerates several. If Leuwenhoeck's System is re-
jected, the force of Condensation must be rejected.
The term Phlogiston is very obscure, nor can we
allow of Mucus, Acid, &c.

With regard to the Putrefaction different Ex-
periments are produced. Some say that it diminish-
es, others that it increases the red colour.

In accounting for the higher colour it is not
probable that it depends on any of these circum-
stances on the Red Globules themselves, but on their
being more or less diffused in other parts of the Blood.
The Attenuation can scarcely be admitted in any
other

other Sense. We do not know from any one Experiment that a red Globule of itself is of a deeper or paler colour. Yet Gaubius seems to think that this happens, and mentions several foreign matters inherent in the blood.

He proceeds next to consider the Coagulable Lymph. It is this which gives the Inflammatory Crust. In some cases the other parts may be able to hold it more in diffusion, which will prevent its proper Seccessione from them. Perhaps too this may be owing to its being too small in proportion. In some cases it may be owing to the state of its mixture as Gaubius thinks, but not oft. The Spontaneous putrescent tendency of our fluids going on to a great degree may have that effect.

The Lymph too may exceed in its disposition to Concretion. 

With regard to this we have already observed that Nature has provided means to prevent this from going too far. Gaubius's proof rather favours our opinion. The application of cold prevents this separation and Concretion. In the case of the Inflammatory Crust, there is no proof that the Coagulable Lymph is then in greater proportion, but is disposed by certain circumstances to separate more perfectly. Any Crassamentum from which

which Red Globules are washed out is equally dense with any Inflammatory Crust.

There are two kinds of Inflammatory Crust; One as described by Gaubius; another where the Crust is spread over the whole surface of the liquid, more Serum being entangled in it.

All this Paragraph depends on the Supposition that the Inflammatory Crust depends either on an over proportion of Lymph or a greater disposition of it to concrete. With regard to the first we must doubt much of it, if we consider how soon blood is disposed to shew this Crust. Thus if a Ligature is put on a Limb for an hour, the Blood shews this Crust. The application of cold is said to produce the same effect. But of the whole of this we have spoke sufficiently before.

We do not imagine that any foreign matter is introduced into our System, so as to produce any Coagulation in our fluids. With regard to the specific gravity it may depend on the quantity of water or red globules, but we know little of the matter.

As to the Elasticity, this probably depends on the quantity of Air introduced.

Succorum Secretorum Vitia. Par. 369.

We come now to consider the fluids in their third state as prepared by the several Secretories. We can suppose that deviations of the secreted fluids may depend on morbid deviations of the common Mass. But as the secreted fluids require a new Constitution during Secretion, these deviations may be independent of the common Mass.

In the Saline Aquaceous fluids we can indeed discern various states of Tenuity or Spissitude; but what causes induce these is not at all obvious. Gaubius says that these allow the Saline parts to secede, and that these Crystallizing give the Calculous Concretions. This is a curious observation and seems not void of probability; but we do not know how far we may extend these general rules, and we have an instance of these Concretions taking place in a fluid of a different nature, the Pile; This is a fluid of a particular kind, which has long, with Justice, held a great place in our Pathology. Yet we have gone but a little way in explaining its nature, or finding out the manner of its production. We may suppose that the Water or Menstruous part of it, may not be

be sufficiently impregnated with the proper matter which may give Inertia. In this proper matter too there may be various Acrimonies, but the nature and Causes of these not rightly understood.

The several appearances of the Bile have not been sufficiently noticed; much less can the causes or effects of these be known. There is great room for Experiment here.

The Succus Mucosus may undoubtedly vary in Consistence & Acrimony, but we know no more of the Nature of these, than we do of those of the Bile. We cannot agree with Gaubius that Stagnation favours the production of Acrimony. As the Mucus draws off a portion of Serum which is the proper Seat of Acrimony, it may contain Acrimony in it, but does this rather in its fluid state, than from Stagnation, which can only make it retain Acrimony that was before in it, more tenaciously. The several species here mentioned are unknown to us. —

There may be Contagion adapted to siere upon the Mucous Glands. Hence Catarrh is found to be so often contagious. Contagion seems too to modulate in the mucus in most of the Exanthematous Fevers. The Small Pox very commonly throw a Portion of their Acrimony on the Mucous Glands of the Fauces. The same happens in the Measles, Scarlet Fever

Fever, and Erysipelas. The fatty Juices are also fit to retain any Acrimony in them, but the Oil is itself a Guard against Acrimony, and is frequently used by Nature for that purpose).

Boerhaave supposed that the Acrimony of the Lues venerea had its seat in the Bili of the body. There is no foundation for this except that it attacks the Bones. It seems rather to have a connection with the Mucus, tho' probably not confined to any particular portion, but diffused through the whole mass of the Fluids.

Dr Haubius next mentions the particular Acrimony of Oils,rancidity. This seems to be a kind of Fermentation, but its nature not perfectly understood, nor do we know any disease to arise from its presence in the system. The fatty part of our Body according to Haubius consists not only of Oil, but also of Mucus, and this Aqueous mucosity abounding may produce Leucophlegmasia, Anasarca, &c. This is entirely Hypothetical. Our oily part may also deviate into excess of consistence. A disposition to this appears in certain kinds of Animals, but we cannot draw any application from this. We cannot agree to the Conclusion that from hence arises Induration, Tubercle, &c. The Steatoms in particular we refuse to be concretions of the Fatty kind.

The

The milk of animals undoubtedly differs in proportion of its Ingredients, and perhaps in their qualities. This tho' chiefly is not solely owing to the Chyle. Thus one cow in the same pasture will give more milk and butter than another according to the circumstances affecting the secretion alone, as Age, &c. In speaking of the *Gelatina Gaubii* doth not enter into the notion of M. Senac. Before the nutritious juice is applied to particular parts, it is prepared in the system, but in what manner is still a mystery. We may allow that it may in certain cases be affected with various Acrimonies &c. as here said, but of this we have no certain knowledge. It is probable that Nature has prudently guarded against such deviations of this nutritious juice on which life depends. If Du Hamel's notion of the Generation of Bone is to be adopted, any deviation is probably rather a topical Affection than any general Deviation. If the *Fluidum vitale* be a matter of Secretion which we are inclined to reject, we know nothing of the state of its Mixture or of its particular Deviations. There are innumerable Mysteries here which we neither can nor probably ever shall Investigate. —

Morbi Humorum Relativi. Par. 383.

We now proceed to the Morbi Humorum Relativi. There are three sources of this as they differ in Copia, Loco, et Motu.

Quantitas Humorum Vitiata. Par. 384.

We shall begin with considering the Quantity of Fluids. The proportion of Fluid to Solid undoubtedly admits of great latitude, tho' there is one best proportion, which however it is difficult to discern, even when present.

Gaubeus considers it at first in respect of the whole Fluids to the whole Solids. He illustrates this by the states of Infancy and old age. In the former the fluids exceed, in the latter the Solids. The Temperies Humida is to be referred to different proportions of the several Ingredients of the blood, as also the Temperies Sicca.

To consider now that plethora or plenitude of Blood passing into the Red vessels, and which is now more abundant than is best proper for the system. The existence of this state seems undoubted. We shall first consider the several species of Plethora. The first is that depending on the quantity, or absolute pletho: ra. Next is the plethora ad spatium, happening to be

be so from the contracted state of the Solids, the quantity of the Fluids not being changed. Whether this should properly come in here as a State of Plethora is doubtful. Instead of being a Predisposition it is perhaps rather the attendant of a Symptom.

Further, our blood as an Elastic fluid may be expanded in its volume, which will have the same effects as absolute Plethora. Next follows a difficult question concerning the Plethora ad vires. This term has been applied in two different Senses. It has been applied to a particular degree of Plethora ad molem, where this arose to such a degree as to affect the Actions of the Solids. In this sense it is only a difference in degree & scarcely deserves to be distinguished. This seems to be chiefly what is considered by Gaubius in the several instances he adduces.

The other Plethora ad vires is when the fluids are in proper proportion, but the solids are not in a proper state to transmit them. This doth not deserve the name of Plethora at all. It appears then that what we have chiefly to consider is the Plethora ad molem. Gaubius rather confuses us here by bringing us back to πολυχαιμία. What we mean by it is when the Red vessels are preternaturally extended with Blood.

MD

We agree with the Systematics in distinguishing Plethora vera, & Spuria, or ad volumen. The plethora vera ad molem is of more consequence and requires our strictest consideration. As to the Cause of this it must depend on a faulty proportion between the Ingesta & Excreta. These in a sound State are either pretty exactly ballanced, or there are provisions made by Nature to restore this ballance; But these depend on a variety of complicated Functions, & Plethora doth undoubtedly exist in the System. The Causes may be reduced to these two heads. 1. The Ingesta being increased, the Excreta still remaining the same. 2. The Excreta being diminished the Ingesta remaining the same.

The first depends on the quantity of Aliment taken in, and the state of the Assimilating powers.

The causes that affect the Excreta are as follows. 1st The Excreta are more or less, as the state of the fluids are more or less fitted for secretion. Our Aliments are in the first place changed to a coagulable Lymph, a viscid fluid fitted for the purpose of Nutrition. This being changed to a saline State & mixed with water gets a Tenuity, and hence becomes disposed for Excretion. Hence saline matters introduced with our Aliment keeps up the Excretions and prevent this Plethora. Animal food as giving the Coagulable Lymph will be found a less perspirable

spirable food than most others. The food of younger
 Animals is for the same reason a still less per-
 spirable food than that of Older Animals. This then
 depends much on their fitness to be converted into
 Coagulable Lymph. 2. More or less is thrown off
 by the Excretions, as the Solids are more or less lax,
 the quantity of fluids being the same. The Impulse
 of the Heart is partly spent in compelling the pro-
 gressive motion of the fluids, and partly in dilating
 the vessels. The more readily these vessels are
 dilated the more will the progressive motion of
 the fluids be lessened and consequently the Excretions
 be diminished. Another circumstance here to be
 noticed is, that the Laxity of the System is in dif-
 ferent proportion in different parts. The Density
 of the Arteries increases as you recede from the
 Heart. The Dilatation then is greatest near to the
 heart, which is the foundation of the filling of the
 vessels, and Accumulation of the Blood in them.
 The dilating powers of the heart are constantly
 diminishing whilst the density is encreasing, which
 preserves a proper balance. On drawing out blood
 from the red vessels we find this is apt to pro-
 duce Plethora. The Tension of our Solid parts de-
 pends much on habits and customs. There is a
 Cord flexible to a certain degree, and which on
 removing

removing the stretching power contracts itself to a certain state. But if a weight is appended to it for some days it will not now contract itself as before. So do our vessels seem to be able to accommodate themselves to various states of the quantity of fluids. But they get a habit of being accommodated to a certain quantity. Our vessels seem to distend themselves in order to be accommodated to the quantity of Fluids they are to transmit. But it is probable that when a portion of the fluids is taken off, they don't contract themselves again proportionally which will occasion Laxity.

Effects of Bloodletting then are to induce Laxity on the vessels, so that fluids thrown in are more apt to accumulate, the secretions are soft, and the small vessels are not filled till the larger ones are restored to their former state. Whilst the smaller vessels are in this state of increased rigidity, from the lax state of the larger vessels the Accumulation in the larger vessels not only arises to its former state, but even exceeds that. We must observe here the effects of Introducing a partial plethora in different parts, in consequence of a different proportion of Density or Laxity.

The Density of the veins is greater in proportion to

to that of the Arteries in the beginning of Life; afterwards the Arteries encrease in Density, or come nearer to a ballance. This explains why the Arterial Plethora prevails in the beginning of life. In old age the quantity of blood is the greatest in the Venous System and gives a venous Plethora. We must refer to the same the other partial plethoras. Thus the head in infancy is the largest, and furnished with the greatest proportion of Fluids. Hence the Hemorrhages and Congestions at ~~that~~ that time of life. Afterwards the other parts get more extricated, and increase in proportion to the head. The Pulmonary System is now more nicely balanced with that of the Aorta, whence Hemorrhages so frequent in the Lungs then. As to the Meneses it is much questioned whether it is a partial or general plethora. The distension of the neighbouring parts must give Tension to the whole System, which will have the effects at least of general Plethora.

There are also various external powers, affecting the progressive motion of the blood & thereby the Secretions, as Exercise of Body & Mind. Hence a state of rest and sleep and indolent life occasions Plethora. —

Lastly there are certain powers affecting the Secretions

Excretions themselves. Thus the Suppression of usual Evacuations, as of Perspiration, has great effects this way. The want of the Perspiration is in some measure compensated by the Urine.

But still it has a tendency to occasion Plethora. Hence a certain degree of Cold gives a tendency to a Plethoric State, and hence the Animals of any particular kind are largest in a particular Temperature. Moisture joined with cold in particular favours this. Such are the various causes producing Plethora.

Gaubius next considers the contrary of this. He is disposed to limit this case, and supposes in every gradual diminution of the Ingesta or increase of the Excreta, the Solids are disposed to contract themselves, and preserve a proper ballance, so that the want of good blood can arise only from large and sudden Evacuations. We cannot agree to this, for we have many instances of the effects of spare diet in this way. Yet large and sudden Evacuations must be allowed to act most powerfully this way. We should add here that Lieutaud has properly introduced a disease, the In or want of Red blood. The French Physicians have indulged themselves in taking away large quantities of blood. Lieutaud gives two remarkable instances of the effects

effects of this, and we have seen the same. Even if the Evacuation is not of red blood it may act powerfully this way, as in the Fluor Albus and all pu: nulent discharges, since Pus is immediately formed in the Coagulable Lymph.

Gaubius goes on properly to consider the nature and Causes of the Obesity. This is oft confounded with proper Plethora. It arises from the same causes, but is oft the effect of the other plethora, and may come by degrees to be substituted for it. By straitening the Bloodvessels too it may give the Plethora ad Spatia. This subject is very fully handled by Haller in his Elementa Physiologia.

If the Nature of Obesity is properly understood, that of Imaciation will also be known, and requires no further comment.

Fluida Loco Aberrantia. Par. 397.

We come now to speak of the Fluida loco Aberrantia. It is obvious that most fluids have their distinct Seats, and these too confined within narrow limits. Others have wider limits but still are not without their bounds. All these are properly called *Errones Loci*. Gaubius divides these into 2 kinds — 1. *Error*
Fluentium

Fluentium; 2. Error Impactorum; 3. where the fluids have changed their place^{enter} into vessels by which they are carried out of the body. & where they are passed into Cavities not designed to receive them. May there not be a 5th Case?

The Error Fluentium is of 2 kinds as we consider the Sanguiferous System divided into Red vessels, & Vasa minorum Generum. To the 1st the red globules are confined tho' perhaps the Lymph is not. If these red Globules then get into the Vasa minorum Gen^{erum}, this is an aberration. An aberration of more consequence is where fluids more confined are carried into seats not their own. This happens in the case of the Bile taken up into the blood. This however is not a proper instance, as the Bile when taken up is for guarding against Acrimony &c, and is not carried along in the blood in its proper form. Another more considerable instance is Absorption of the Bile into the system. This however is a proof that the Inner surface of the Blood vessels is not very sensible, since in these cases there is oft no remarkable disturbance.

The next instance is that of Urine. This fluid may be diffused over the whole System, and unless it is pushed into particular Cavities, as into the ventricles of the brain, it continues so a long time

time, without producing any very dangerous effects. —

Next is the Absorption of Perspiration. Here the Pathologists have had recourse to a particular Acrimony retained in the system. But we offend the Perspiration retained & compensated for by the Urine without any bad consequences. Even where the Urine is not proportionally increased, it has continued obstructed for some days, & then been restored without any bad effects.

We cannot refuse that retained perspiration may produce Acrimony, but insist that the instances particularized by Pathologists are not of that kind & may be explained better another way, as by a change of Tension.

The doctrine of Concoction and Crisis is still involved in great Obscurity.

We know of one cause only of Purulence. Whether the Absorptions of various other matters is to be considered as Error Fluentium is uncertain.

Next follow the Error Impactum. As all particles of Fluids by their sine viscosity are not fitted to be transmitted thro' all vessels, this Error Impactum may arise. Yet we don't know in what cases it arises except in the cases of the red Globules passing into the vasa minorum Generum. This is the famous Error Loci of whose Existence we doubt much. 1.st We are

are disposed to believe that the Series of Vasa Mi:
:norum Generum is very short. The vessels too are
capable of much dilatation, without any bad con:
sequences, and red Globules do accordingly pass
thru them. Further in these minute vessels, the
Ramifications are very frequent. What gives,
occasion chiefly to this supposition is the conical
form of the vessels. But the space between every
Ramification is perfectly cylindrical, which will
tend much to prevent any such obstruction. Add to
this, that in case of great dilatation a great con:
traction is also produced, which will drive the
red Globules backwards. This fact observed by all
microscopical observers.

From all these circumstances this Error Loci
must be very rare. Dr. Gaubius seems sensible of
this and adds the case of obstructed vessels in
consequence of Spasm. But this not properly an
Error Loci, which is never the cause of obstruction
in red Globules, tho Spasm of the vessels super:
vening may occasion obstruction.

The Error Excretorium is of two kinds.

1. Where the fluids that sh^d not be poured out
at all, are carried out of the body. Whether the
Serum is carried off in greater quantity in the
Diabetes is not very certain. The Excretion of
Urine

still grosser fluids is still more uncertain. The 2^d case is, where the fluids that sh^d be excreted are carried out by passages not their own.

The instance of the Sanguis Menstruus leads to the supposition that a particular kind of fluid is prepared for that secretion in the Uterus; whence it is only owing to a change of Equilibrium.

The 4th case is the Error effusorum, which is, the most considerable of all & may be called Ichthyosis. A difference arises here, first, from the manner in which the fluid is poured out whether by Anastomoses or other affections of the Solida Continentia; 2^{dly} From the cavities into which they are poured, either natural or praternatural, as in Hydroptic cysts. 3^{dly} From the nature of the fluid poured out; this may be referred to an increased impulse of the fluids, as in Sagillation, Inflammation, Hemorrhage.

There is another case of increased Sensuity, as in the Ecchymia & other putrid effusions. 4^{thly} From the changes induced in the fluid effused. The reason of these various changes are not known, as why in some cases a coagulation takes place, in others a supuration, and in others there is a reabsorption. The Absorbents in their natural state are capable of absorbing fluids only of a particular kind.

But.

But if you wound these Absorbents further from their Orifices, they will now take up fluids that they did not before. Suppose that this rupture of these vessels takes place in the reabsorption of the red globules, which explains that Phenomenon.

Next follows the Effusion of Serous Fluids. The various causes of these Effusions we have already delivered in a Table.

With regard to the corrupted humours this depends upon the changes induced in the effused humours. Dr. Haubius properly adds the case of Air. But in what cases this happens or with what effects it is attended is not known.

As to the question next started we must not be rash in concluding Ossification of blood vessels &c. to be an Error Loci.

The 3^d head of Morbi humorum relativi is the Vitia Motus.

The various fermentations occurring in Animal fluids are carried on by a motion of their parts with a decomposition probably and some change of their mixture. That such a motion is going forwards seems without doubt. But after this general Observation we can go no further, nor can we assign the nature, causes, or manner of action of these motions.

Another

Dr. Cullen's Doctrine of Fever.

Another species of the *Motus bilia* more manifest is a change of the progressive motion of the fluids. This is either general or partial, as it prevails in the whole or only part of the system. Dr. Gaubius here touches upon two of the most important points of Pathology, viz, the Proximate Cause of Fever, and of Inflammation, but he doth it in a very imperfect manner. The importance of the subject requires that we dwell more fully on it.

Of the Irritamenta of Gaubius we may observe that if they continue for any long time, the System is provided with certain vessels or pores which prevent their effects. This doth not account for the most frequent instance of Increased velocity as Fever.

We cannot readily refer this to the action of external causes, for these seem to be our intermediate state that of the Cold Fit. In this there appears very universally an Inertia of the system. How these Stimulant powers introduce this intermediate state of Inertia is not easy to conceive. It is necessary to look here for another set of causes.

This subject may be considered in two ways.

1st In a practical view as to establish the fact that this
cold it always takes place. 2^d To &c—

Doctrine of Fever.

2^d To shew that this cold fit consists in a Spasm on the surface, which is a Stimulus inducing the increased Action of the heart & Arteries, in order to overcome the Spasm.

The other view, and which more properly belongs to Pathology is to confine ourselves to this Series of Causes, & shew how these act in producing each other. This is a difficult matter, but, first, we can readily conceive that Cold applied to the surface of the body by increasing the Contraction of the Solids and by diminishing the rarefaction of the fluids & the mobility of the Nervous power, may resist the distribution of this power to the extremities of the Nerves, and make it to be accumulated in the Sensorium Commune.

2. The Nature of the Sensorium Commune is such that there is a certain power thereto restore the System to an Equilibrium making a resistance to it's Accumulation, and pushing it to the extremities of the Nerves, especially those of Motion.

3. Admitting of Dr Haller's Scale of Irritability with regard to the heart, or from custom, or from it's share in the Equilibrium of the System, the ordinary influx thus produced will act on the heart, and larger vessels. The increased action of these will tend to restore the action of the Nervous power

Doctrine of Fever

power to the extreme vessels, & by propelling the blood there too, will serve to increase their action and produce respiration & a copious sweat. But in the next place we must observe that this is not the order always in which they happen. In some cases the affections begin in the Sensorium; thus an object of fear in consequence of certain relations before established, will produce a constriction in the Sensorium commune, which will have the same effects as cold; here then there is the same Accumulation in the Sensorium.

4. It is not difficult to suppose that Miasmata or Contagion (the other head of Causes of Fever) may operate on the Sensorium commune in a manner analogous to Fear; or, what is less probable, on the extremities of the Nerves in the manner of Cold.

Its operation in this way is pointed out by innumerable facts.

An Accumulation in the Sensorium will sometimes kill immediately. Further contagion of itself may be sufficient to produce this series of affections: But according to Dr. Lind and others it seldom or never has this effect, without the concurrence of cold or fear. The theory of our has not yet touched another source of Fever

Doctrine of Fever.

Fever very different from the above, viz, Topical Inflammation attended with general fever & febrile hemorrhages. Hence our Theory doth not apply so readily - Yet first we observe that this topical Inflammation arises from a distension of particular vessels - Now this over distension is easy to conceive, for it proves a direct Stimulus increasing the action of the moving powers in these parts.

Further the distention must be communicated to the neighbouring vessels, and the Stimulus may also be extended so as to produce Inflammation. But how it should extend over the whole system is not easy to shew. We may suppose it is by Constriction on the part, which gives a Stimulus.

This Stimulus doth not produce general fever without a previous cold fit. This is what gives the greatest difficulty here - The particular constriction here is by Sympathy said to be communicated to the whole system. But this term doth explain how this communication is produced.

We have formerly evaded this question & hinted that Cold applied to a part of the system will produce Cold over the whole. The horror here
is

Doctrine of Lever

here is to be supposed a Communication of the affection along a continuous membrane, yet even here the Sensorium seems to have a share in the communication. Waving this I would say that the Sympathy applies only to the external surface, not to the Pleura, Peritoneum &c. Another explanation is to be looked for. 119.

Thus, we would observe that every excretory effort is attended with Urine, as in Vomiting, excretion by Stool & Urine, hemorrhages, menstrual eruption, excludio partus &c.

There must be something then in the effects of over distension besides Stimulus to produce this Horror. We may suppose then that it also produces Anxiety, which is universally attended with a weakness of the Sensorium, & consequently an Accumulation of the nervous power which will operate in producing a general fever. This combines all these cases of topical Inflammation &c. with the Theory of general fever. This Theory might be confirmed by enumerating the several Phenomena of fevers, by an application of it to the several species of fevers &c. But our time will not admit of such a discussion—

This finishes what we have to say on the subject

ject of Fever and Inflammation, Dr Gaubius next 120.
proceeds to the Morbi Compositi. He is sensible here
that this will lead to a very subtle question on his
own plan, and it belongs rather to a practical enquiry,
omitting this then we proceed to consider the Remote
Causes.

These are divided into the Occasional and
Prædisponent.

The Potentia Noxæ may in certain cases prove
either. These are reduced to two heads properly.

1. The action of external Bodies on us.
2. The actions of the Animal System itself.

The first may also be referred to the applicata &
ingesta, the latter to the gesta. The subdivision
of Non-naturals is unnecessary, and the term
itself is ambiguous. Dr Gaubius has not himself
assumed any regular division but begins with the
Air.

In considering his Noxive Atmosphere Potes-
tates, he

1. regards it's sensible qualities.
2. It's essential properties. — and
3. It's various contents.

To speak of each of these now in order. Under the
sensible qualities of the Atmosphere we reckon Heat
& Cold, Dryness & moisture. The two first are the
most

most considerable powers acting on our system. Their effects are to be considered as Absolute or Relative, either in changing from degree to degree, or in respect of the state of the human body.

As to the Absolute heat every temperature less in degree than that of the body would diminish & bring it to its own degree, if the human body was inanimate. But in Animal bodies & especially the human this doth not happen, but rather when continued serves to increase its heat.

If the human body is at 98, an Air of 80 will at its first application feel cold unless preceded by an Air of 70 - But in either case if continued it increases the Animal heat. The first point then to be determined is to say what state of the Air is properly heat or cold with respect to the Animal body.

The mean temperature of the different countries has been fixed upon as the necessary degree of the state of the Air in this respect, by most Philosophers. This agrees perhaps tolerably well with Vegetables, but not at all with Animals, we have a power of generating heat within themselves, and we find that this generative power is different in different Animals. - No Experiments are yet made on this subject.

But with regard to the human body in this climate
it

Animal Heat

it seems to be at 62° of Fahrenheit's Thermometer, a chamber of that degree of heat being agreeable, feeling neither hot nor cold. In any temperature below that we don't immediately find cold unless we get below 60° & nearer to 50° . — At 64° the air appears rather warm, at 58° cold and rather disagreeable. Any degree below 62° has either more or less of the effect of cold; above that, of heat.

A determinate degree of heat is requisite to the mobility of the fluids, as also to the laxity of the solids, & accordingly best suits the human constitution. This heat is from 96° to 100° — In $9/10$ of the globe men live in a temperature much below this Animal heat. Here then a part of this heat must be communicated to the neighbouring Atmosphere.

There must then be in men a power of generating a heat of 96° whilst the temperature of the air is, at 62° . If we take two bodies which have no power of generating heat, as two portions of water but of different temperatures, & blend these together, the temperature of the mixture will be the mean between that of the two portions. For bodies thus applied by contiguous surfaces are one getting, the other losing heat. But in bodies generating heat it is otherwise.

If we take a furnace w^{ch} we can keep at a determinate degree

Animal Heat

degree of heat, the vessels &c placed in it will arrive at nearly the same degree. But on account of the communication with the air by which the furnace is always losing heat it comes to a particular balance which tho' not equal to the generating heat is above the mean degree between that & the surrounding bodies. This point will vary greatly in different climates, being lower in cold & higher in warm ones. It must however be observed that it rises in hot countries more than it sinks in cold ones.

Thus the absolute heat is variously modified by the relative.

Let us consider the effects of absolute heat either on the whole system, or on Respiration alone.

1. Heat gives greater rarity & elasticity to the nervous power & consequently greater mobility, and therefore greater sensibility & irritability.

2. Heat expands all bodies, increasing the laxity of all flexible bodies & so of our solids; but this it diminishes the Tension & makes it less steady.

This is another source of Mobility and particularly of Irritability.

3. Our fluids are somewhat expanded by heat in their bulk which gives a distension of the Solids. In particular the very increase of Elasticity gives greater fluidity. — all fluids we find increased by heat, as
also

Animal Heat

also all intense motions in bodies. One of the most 121.
sensible effects we see is a constant tendency to
putrefaction. It also promotes the Acescent fermentati-
on in all bodies liable to it. It may probably have
that effect in the human body as Dr. Gaubius thinks
- But we cannot admit of this - It goes on to a certain
degree in our Stomach, but there are certain provi-
sions there either to check the Acetous fermentation
or by mixing with these matters to give them rather
an Alcalescent tendency than an Acescency. We must
add to all these that from some of these powers already
mentioned.

Heat by its own stimulus constantly increases the
action of the heart & Arteries, giving a more frequent
pulse, and in consequence of this perhaps determin-
ing the fluids more copiously to the surface of the
body. - But this may also be owing in part to the
dilatation the heat induces on the vessels of the surface.
Hence then perspiration is increased, Urine diminish-
ed. From this determination to the ~~fluids~~ surface a
greater proportion of fluids is carried off that way.
Hence the Urine is not only diminished, but is also
made more Acid.

We may suppose the same of Bile tho' we don't know
its precise states of Acrimony.

We must now consider the particular Effects of Heat on
Respiration -

W.D.

Animal Heat

* We find that flexible Bodies do not increase in their flexibility in an equal Ratio to their encrease of heat. If we take Wax or Sulphur these by Friction become elastic, but by encreasing this heat they incline to melt & become less elastic. May we reason from this Analogy & suppose some such thing to happen to our Nervous Power, the mobility of which may be increased by a certain degree of heat, ^{but beyond} ~~but beyond~~ that is diminished.

We can explain Respiration by supposing the Aperture of the glottis sufficient to admit air enough to restore the balance made by the dilatation of the Thorax.

The Air we breathe is much cooler than our body. As thus applied then it's heat must be increased, & of course the Elasticity. We must impute then the dilatation of the Lungs partly to the quantity of Air taken in, but also to the change it undergoes in Elasticity. This will be in proportion as the Air is more or less dense. Hence the most cool & dense air gives the easiest respiration. Where the temperature of the Air equals 98° , respiration must depend entirely on the quantity of Air taken in, and hence it is very difficult then. The fluids too are then rarified & occupy more room in the Lungs, which contributes to make the transmission more difficult, whence arises that debility sense of resistance & languor in the hot countries it is not easy to say, but probably it depends on the Anxiety occasioned by this difficult respiration which as we have before observed is attended with weakness of the Nervous power; but the effects do not arise in proportion to the heat.

It should seem that as the heat is increased the power of generating heat in Animals is proportionally diminished * Thus it is observed by Muschenbrouck that

Animal Heat

that Bodies on the application of heat expand more 126.
at first than afterwards. So the effects of heat rising
from 60 to 70 are greater than from 70 to 80. We
find too that flexible bodies don't increase in their
flexibility in an equal ratio to their increase of heat.
For if we take Wax or Sulphur these by friction
become Electrics, but by increasing this heat they
incline to melt & become less Electric. May we reason
from this Analogy & suppose some such thing to
happen in our Nervous power, the mobility of which
may be increased by a certain degree of heat, but
beyond that is diminished. Our blood too seems to
be less liable to rarefaction as the heat increases—
Probably the increase of Putrefaction contributing to
the increase of Saline matters in the blood may
diminish the generating power.

Some of the effects of heat are instantaneous,
some require a length of time, hence the effects of
heat on our System are so much more remarkable
at the end than at the beginning of the summer, and
in warm climates than in those more temperate
ones—so much depends on the duration of heat.

The Case of relative heat arises chiefly from
sensations, it must therefore depend rather on the
state of the Nervous power than on any given force
of the Impression.

How

Animal Heat.

How far this is independant of absolute heat is not certain; it seems less certain than relative cold is to absolute. In degrees below 62° the Impression is agreeable & pleasant & therefore makes less Impression. The degrees above that are painful & have a stronger Stimulus.

But relative heat is particularly to be considered with regard to it's effects on Solids & fluids.

It expands the fluids more readily than it relaxes the solids. This however is different at different times. Fluids in their dense state are most liable to rarefaction, hence the greater effects will rather be below 62° than above it; thus a change from 40° to 50° will rarify the fluids more in proportion to the solids than from 70° to 80° . There is another reason for this - at 62° there is a proper proportion or balance between the solids & fluids, below this the solids are more contracted, above it more relaxed. In this last case then the solids yielding more readily will obviate the effects of heat. Inflammatory affections & particularly Rheumatism depend on this proportion between expanding fluids & contracting solids. Hence Inflammatory Diathesis prevails most in seasons & climates where the degree is below 62° , and particularly in the spring when heat supervenes

Animal Heat

supervenes on the cold of the winter. Further 128.
heat increases the Alcalescent or putrefactive
state of the fluids, it however in very few in-
stances shews putrefaction actually produced.
Animals exposed to a great degree of heat im-
mediately become putrid, but in ordinary states
of the Atmosphere this will not happen tho'
it appears to do so.

Heat occasions an increased exhalation from
the Lungs, which if reabsorbed is poisonous. The
perspiration is probably much of the same
nature. If heat occasions putrefaction it is ow-
ing to the Animal being inclosed in a small por-
tion of Air, so that this poisonous matter is
not allowed to escape. So much for the effects
of heat on the System in general. It will be easy
to understand what are its effects when applied
to particular parts of the System. Heat at the
degree of ^{only} reaches to the Rete Mucosum, pro-
ducing Blisters. At a higher degree it gives
Inflammation affecting the texture of the part.
At 156 it coagulates the Animal fluids, and some-
what higher it is an actual caustic.

With regard to Cold we have already fixed its
Limits. We are exposed to degrees much more
below

Cold

below 62° (that is in the Atmosphere) than to degrees above it. Add to this that we can bear this extreme much better than the approaches to extreme heat.

Our reason is, that on the side of Cold the power of generating heat is increased as the cold is increased; for the tension & firmness of the Solids are now increased, wch contributes to the generation of heat greatly. Besides this too the Inhalation of the body is intercepted between the body & the surrounding Air. This is the foundation of Cloaths & houses in order to confine to our Bodies a certain portion of what may be called our own Atmosphere, and thus, not allowing the Air in contact with our body to be much changed.

Further we guard against cold by Fuel, but we have not these advantages on the side of heat - This is the first effect of Cold when applied in a Stream to carry off our Atmosphere.

The Effects of Cold on our System are

1. A Condensation of the Nervous power which diminishes Sensibility & Irritability.
2. A Condensation of the Solids giving more force & tension.
3. A

Effects of Cold.

3. A Condensation of the fluids, thus diminish-
ing their expansive power.

The Effects of Heat pervade the whole System, & those of Cold affect only the surface, & don't reach further into the System than as the whole temperature of the body is altered which for the above reasons can seldom happen; hence the Condensation of the nervous power seldom takes place; hence too we have no effect opposite to that of heat by which intestine motions are increased.

We must now mention another circumstance preventing our opposing the effects of heat & cold. Cold is as well as heat a Stimulus which is suited to obviate the other effects of Cold. We have frequently observed that there is in our System a constant tendency to restore it's balance: This is a remarkable instance of it. Whatever tends to diminish the tension of the System if not in the strongest degree proves a Stimulus & so obviates it's own effects. Cold may also follow the case of relative sensation. If it falls below it proves a Stimulus, & the more the lower it goes. Dr. Wm. Witheringham observes that in falling the effects are always the same as whether from 80, from 70, or from 50 to 40. He draws some conclusions from this
well

Action of Cold

which cannot be admitted. The degree of change of temperature being given, the change in the system will be greater according to the preceding heat of the system. 131.

Cold acts in two ways.

1. particularly on the vessels of that part to which it is applied.

2. As a general Stimulus to the nervous power, & both these make it prove a Stimulus to the whole system. The sensation then may be equal in whatever part of the Scale the fall happens.

Tho' the particular Stimulus may be greater as the heat of the body is greater, yet its effects on the Mobility of the nervous power will be equal. — It is said that Cold acting as a Stimulus is not to be considered in its highest degree, for then it may either destroy the mobility of the nervous system in general or may overcome the balance so far as to occasion Death.

We cannot impute as Gaubius doth the Sleep & Death which happen in extreme cold to freezing, as they occur long before the freezing comes on. When Cold is applied in such degree as to constrict the vessels very strongly, it will have different effects according to the states of the system & the force of the Circulation. But when applied in such a degree as to overbalance the power of the sensorium

Action of Cold.

Sensorium it's effects will always be the same.

Every one observes that the effects of the same degrees of cold are different at different times, & so in different persons at the same time. These effects are always corresponding to certain conditions of the body, which is according to the vigour of the system & the strength of the sensorium.

We observe that the body is more exposed to cold in rest than in motion, this particularly appears in sleep. The same happens after considerable evacuations, after previous diseases, fatigue, excessive venery, drunkenness. A state of fear also contributes to the same. — We must add to this contagion which we observed to act on the sensorium in the same manner as cold & fear.

We need not add how cold produces Fever. Cold as applied to the surface determines the blood to the internal parts, whence the Urine is increased; but in many cases this determination may be to the Intestines giving a Diarrhoea or promoting the Secretion of the bile. The determination to the Lungs requires particular notice. What is the connection between these & the surface?

In every Accumulation to the internal parts the Lungs must have their share, but there seems to be something more than barely this. — We must apply here what was before said of the constricted solids & expanded

of Effects of Moisture & Dryness.
1st Dryness

expanded fluids. We have so many ways of guard-¹³³
-ing against Cold that it's noxious effects do not so
oft happen. But when it does take effect we shall
have that proportion much altered - hence we may
understand the foundation of the Inflam.^y Diathesis;
hence too it appears why the Angina, Catarrh, &
pulmonary Inflammations constitute the chief In-
flam.^y diseases, if we add Rheumatism too we shall
have 49 out of 50 cases.

The last observation to be made is that transitory
cold, tho' to a considerable degree will have less ef-
-fect than a smaller degree long continued. This is
easily explained by the Sensorium being prepared
to obviate it's effects; hence cold with moisture
is so effectual that it seems to have a power of
generating Cold. - Cold is remarkable for increas-
-ing the appetite of hunger - heat diminishes it.
This depends on the Theory of Appetite, which is,
not yet fully explained.

We have hitherto spoke of Cold as occurring in the
ordinary States of the Atmosphere. The effects of
higher degrees will be easily understood by consult-
-ing Gaubius on this head.

We are next to consider the Moisture & Dryness
of the Air, and

1. Dryness. - In the State w^{ch} Dryness occurs in these
Climates it is always Salutary, and it is only when con-
-curring

Moisture

-curing with states of temperature above or below 62° that it can be noxious. When joined with heat it increases perspiration, & thus the exhalation of the more fluid parts wch increases the Acrimony of all the internal Secretions; hence it is found to produce various Bilious diseases.

When joined to Cold it increases its effects, partly by carrying off the exhalation, partly by that exhalation generating cold, & so constantly applied to the surface. These effects are inconsiderable as there is a stream of Air applied to the body; hence we would explain the singular effects of North East winds. These have been supposed to bring with them frigorific particles, which we cannot admit. Their operation then is to be derived from their dryness. From the same Theory we wd suppose that tho' dryness increases the effects of heat, yet it is not improper but by its sudden exhalation it is one of the means of tempering heat, and a moist warm air affects us more than a dry warm one.

(With regard to moisture) we must observe that the water of the Atmosphere is in two different states. Air in its driest state contains much water, but it is then so dissolved as not to affect its dryness. This is only to be separated by a diminution of the medium or of its density. But Moisture in this state is not attracted by the human body tho' it is by Acids.
2. But

Moisture

2. But another state of Moisture is when it is diffused in the Air - this diffused moisture the Air gives to every body drier than itself - In this state it may be absorbed by the human body when that is in an absorbent state. 135.

Hydrometers tho' they attract dissolved waters don't give us an proper Indication of the Absorption by the human body. But it is the case with those that have been yet employed that at first they give a tolerable measure of the Moisture of the Air, but not after a few days. To speak now of the effects of Moisture. The chief is the giving increase to the effects of Cold, by giving occasion to the generation of Cold & applying that constantly to the surface of the body.

Moisture with heat occasions an accumulation of the perspiration which keeps up the heat, by this too it relaxes the Solids and will go on to expand the fluids.

Further, Moisture present in any portion of Air is always a mark of it's being stagnant, unless when it is immediately induced by a stream of moist Air. The power of Air as a menstruum to water has it's limits, and the nearer it is to saturation the slower will it absorb our Exhalation, and the more readily will it admit of Precipitation. - Any moisture that can arise
from

Gravity of the Air

136.
from our globe, if diffused over the whole Atmosphere will be dissolved in it, nor can it fully saturate it. Stagnant air has considerable effects by its moisture, but further also by its increasing putrefaction. It is moisture which confines our perspiration about the surface of our body especially as combined with Stagnant air. Add to this that it increases the putrefaction of surrounding bodies. It is probable that Contagions may be so diffused as to become innocent, & that it only acts as accumulated in a certain portion of Air.

We next speak of the gravity of the Air. The weight of it on our bodies when the Mercury stands at 30 inches tho' we are not conscious of its pressure, is 15 lb. It doth not even act on liquids & only on elastic vapours - But there are many observations shewing our bodies to be affected by a diminution of this pressure - We may conceive our fluids & our intestines to contain Air which is kept in balance by the surrounding Air, & if this last is diminished it will be expanded & give distension, and from this turgescence of the fluids many harms may arise. Notwithstanding this specious reasoning many phenomena are not to be accounted for this way. We don't feel any sensible effects at mounting to a very great height. The French Academicians ascended mountains where half an Atmosphere was taken off, and yet there were no considerable effects felt except on Respiration, and that too only

Noxious Effects from the Contents
of the Air. Exhalations.

only in motion; hence it is scarcely credible that the falling of ^{the whole weight} is of an Inch can have any great effects on our System. — This problem is not easily solved. 137.

We don't know the state of the Air in our Membranes whether it is exhaled, how it is supplied &c; or whether it counterbalances the surrounding Air.

The great increase too of the pressure of the Air has very little effect, as we see on descending into very deep mines. Even in the diving bell the effects produced seem to be from the pressure not acting equally on the body. The effects then of the fall of the Mercury in the Barometer must be either referred to a change of temperature or to the effects on respiration. Some very irritable people are liable to Hemoptoe on small changes of the pressure of the Air. — So much for the qualities.

To speak now of the noxious effects of the Air with regard to its contents.

These are numerous and of great variety if we consider the various exhalations from our Earth. The fossil kingdom supplies these very copiously which arise sometimes from very great depths. — Some false effects are attributed to these, as a person finding very salutary effects from following the plough & smelling the new turned Earth, &c. &c.

The Vegetables are a still more considerable source of exhalations. These not only furnish much matter, but it is considerably diversified by passing thro' the
Organs

Exhalations.

Organs of various plants. Animals too afford a large proportion of Effluvia to be taken up into the atmosphere. In certain places we may see the Fossil exhalations arise, as also the vegetable & Animal ones. Another large source is from human Excrements &c. of whch we have plenty here in Edn. we don't know the effects of these in general, & their particular influence must be very uncertain.

There is certainly a power of mixture in our atmosphere rendering these various matters innocent.

There is still further the power of diffusion whch can render the most violent poison innocent. If we inclose a growing plant in a glass receiver it will in a very short time have its effluvia putrid, yet we don't know any noxious effects of vegetable exhalations as taken into the atmosphere. The most deleterious poisons are rendered innocent as appears from the state of the Air near Lead mines which is very noxious six days of the week, but innocent on Sunday.

Putrid Effluvia are noxious to Animals, yet even in these it is difficult to say in what circumstance they act; and when an abundance of putrid effluvia produces noxious effects it appears to be a putrid matter of a particular kind, and in a very concentrated state.

We must add that probably what is attributed to putrefaction relates only to a particular part. This is Mephitic Air, whch is a very virulent poison, & may therefore in smaller doses occasion various diseases.

This

This Air arises from various sources. It is the Specific fossil exhalation occurring in several mines. It arises copiously from all burning bodies, all animals, all putrefactive & fermenting bodies. From one or other of these sources all stagnant air that has communication with other bodies becomes impregnated with Mephitic Air.

The Air is not corrupted by Stagnation, but only in consequence of communication with other bodies. This then demands our most strict attention. We know it only by its sensible effects on Life & Flame. Yet it is probable that it is variously modified so as to have different effects on the body. In what circumstances are these noxious qualities of the Air induced? Or, what favour these Impregnations? What occasions Heat, Cold, Moisture, or Dryness? These belong to various other branches of Science.

We next consider

Noxa a Cibâ et Potu.

The Animal Economy is suited to such a variety of food that by habit it can be reconciled even to those that are noxious. Further, food of opposite natures prevents each others effects. There are also certain provisions made by nature to prevent these effects. Many kinds too of excess in Diet don't operate till they have continued long in the System.

We shall proceed to consider the subject in the order of Dr Gaubius, who 1st considers

1. The

Errors from quantity

1. The Errors arising from quantity.
2. Those from the disposition of the Solids & fluids.
3. Those from their qualities.

To this he adds the Errors of foods taken in with a view to Manducation, & lastly, the difference of time in eating & drinking.

Now 1.st of the Errors from Quantity.

We cannot ^{consider} this as affecting the Stomach, & thro' that the whole ~~whole~~ system immediately. For

1. Aliment considered in quantity, first affects the Measure of the Stomach.

2. It affects the Stomach with a view to Assimilation.

3. Thro' the Stomach it affects the System with fevers.

We have no measure of the proper quantity of our Aliment, but the satisfying of our Appetites. This depends in a certain degree on fullness; it has therefore a manifest connection with the bulk of our food — what the due degree of distension is is difficult to say, but it is different in different Systems. We can gradually accustom the Stomach to receive more & more food; thus it creates an artificial appetite which is attended with the effects of Plethora. —

We may observe in general that Vegetable & Animal food differ greatly in this respect. — Vegetable food has a less proportion of Nutritious matter than Animal. The large distension then by Vegetable food has not equal effects in producing Plethora with that by Ani-
mal

Pathol. S. 150.

Excess in quantity.

mal food. This gives an important lesson in point of our diet. If then we take vegetable food it will fill our Stomach without inducing plethora or other effects in quantity with regard to the measure of the Stomach. If the Stomach is very largely distended the Pylorus is raised up, which prevents the Aliment from passing off so easily, and further its bulk is still increased by the fermentation going on there. Hence it must be thrown off by vomiting. It will also have all the effects mentioned by D. Gaubius. He joins to this what we consider separately, viz. how this distension prevents Assimilation by causing an over distension of the Muscular fibres & preventing a proper discharge of the gastric liquor, by the quantity of the Aliment being in an over proportion to these liquors &c. &c.

Further, excess in quantity prevents an easy digestion - This produces various effects on the System, & among the rest Fever. This however will depend much on the nature of the food, as being more Stimulant, more difficult of solution & perhaps of Assimilation also. - We know the bad effects of it when concurring with other febrile disorders: But independant of these it has a great share in wearing out the System. - It is surprising that this is omitted by Gaubius.

Lastly, excess in quantity occasions plethora. The measure of the proper quantity depends on the
Secretions

Defect of quantity,

&

due proportion between fluid & solid Diet.

Secretions & excretions, and if these are properly balan-^{142.}
-ced these effects will be greatly diminished. But the
more food passes thro' as the more all our functions
are exercised which must wear out the system. -
Further the balance of people living in this manner
is very nice & easy disturbed; tho it has been said
that more or less food is of little consequence, yet it
is allowed to be of great consequence where there
is a tendency to plethora. - Celsus has therefore erred in
advising them to take in more food, if at the same
time they use more exercise.

On the other hand, defect of quantity may be at-
tended with bad consequences, but we are disposed
to think that this must be carried to a very great
length before it produces them, and that it seldom in
fact happens unless from necessity.

We have before spoken of the effects of the Spontaneous degeneracy of our Aliment & the necessity of fresh supplies. There is much fraud in the cases mentioned of excessive abstinence.

We shall next treat of the due proportion between the fluid & solid diet.

That there is a due proportion necessary to perfect health is certain, but what this is, or what the effects of a deviation in this respect are is difficult to say. We think that this must be carried to a very great length before it is attended with the bad consequences
here)

Qualities of Food. Gaub. § 457

1st Chemical, as in

a. Consistence

b. Mixture

Faults from Consistence.

1. Vivid.

2. Oily.

here mentioned from changing the state of consistence of the fluids, or rather that it can scarcely ever have this effect. An over proportion of solid food may perhaps induce Plethora, that of the fluids may prevent it and be rather healthy.

Dr. Gaubius next considers the Qualities more particularly. And first the Chemical ones or the faults of Consistence & Mixture. Those erring in consistence and liable to give Spissitude to our fluids are of two kinds, Viscid and Oily. When a cause acts only in the internal parts of our System we are liable on many accounts to be mistaken with regard to its operation, especially if we judge of these from the sensible qualities they exert without the body. We must therefore be cautious in supposing the qualities of our Aliment to take place in our fluids. This Observation particularly applies to viscid food. Nine tenths of Mankind live on Farinacea, and yet we discover no bad consequences from this.

We would not refuse the existence of viscid food but we don't know when it doth or what are it's effects. Something of the same kind may be said of the Oily food. We are more ready to think that oil doth not retain it's proper form in our fluids, and that it appears in the Cellular Membrane it is evolved by the powers of Secretion. It seems probable

probable that the Oil enters into the Composition of our fluids as a mixt, yet as over abundant, in the mixture it may be the cause of Plethora, Obesity &c. Dr Gaubius has a particular Theory here about his Mucus Iners, the existence of which we entirely reject. These oily matters degenerating may introduce a vitious acrimony into our fluids. With regard to Oils in their rancescent state we are still more uncertain about their effects and they act very differently on different stomachs. Perhaps their effects are confined to the Stomach, & if the Stomach can bear them they will perhaps have no farther effects on the System. To consider now the faults of our Aliment with regard to mixture.

We shall first consider our Aliment as vegetable or Animal. The vegetable is to be considered as Fermentable or Fermented. It is all capable of vinous fermentation & undergoes this in the Stomach. Most of its noxious effects are to be attributed to what happens during this fermentation in the Stomach. There is then a Gas Sylvestre produced, which is absorbed & disguised by the Saliva and other fluids according to Dr Pringle. But
in

in certain cases, as if too great a quantity of fermentable food is thrown in, or these fluids are not properly applied, this Gas Sylvestre may take place. This is chiefly a Mephitic Air, and as such Air destroys the Mobility of the Nervous fluid we may easily conceive it's effects. It is a very expansive fluid and expands very unequally whence unequal Spasmodic Constrictions in the Stomach attended with distension, vomiting &c. &c. If it gets into the Intestines it may produce Diarrhoea, Cholera Morb. &c. What sort of food chiefly contributes to develop this Gas Sylvestre it is worth while to consider. Sugar is the very basis of fermentable matter & so may be easily supposed to have this effect. Gaubius goes further and supposes that it attenuates our fluids. If carried in it's entire form there it might like other neutral salts have this effect; but we cannot suppose that it is so. As to their flatulent effects these are properly to be considered as they contain more or less Air. The Legumina seem to contain more of this than the Cerealia. Veget. Aliment seems more liable to remain long in the Stomach, and to produce this high state of fermentation according to the firmness of their Texture.

W

We have spoke of the Gas Sylvestre as a Mephitic Air. This probably is variously modified as variously impregnated perhaps with some subtle acid &c.

To consider now fermented vegetable food. Tho' we refuse the existence of Acid in our blood vessels, yet as taken in in too large quantity and so entering into the composition of the fluids they may have these noxious effects. What these are we don't know. They unite with the Bily parts & dispose them to pass off by the secretions, whence their use in preventing or removing Obesity. Acid probably gives our fluids more of a Saline state. With regard to their Acescent state we would allow that they may dispose our fluids to deposit their Earth, whence Gout and Calculus, but even this is not without doubt. For in the Gout there seems a great deal to depend more on a particular constitution of the System disposing it to produce fluids of such a nature, than on the effects of Acescent food on the fluids. As the fossil so the Vegetable Acids cannot in all probability be taken in in sufficient quantity to produce any such effects. In some gouty persons a bottle of wine will bring on a fit of the Gout. As so many Phenomena show the connection of the Gout with the Stomach we

we would rather attribute this effect of their operation immediately on the Stomach than to any Acrimony they diffuse over the whole System. As Fermented liquors contain Alcohol, they are next to be considered.

These as containing some matters not properly fermented they may still be supposed to act on the footing of Acacents, but this will not extend beyond the Stomach. A matter as containing Alcohol doth not affect either our Solids or fluids. Alcohol coagulates the fluids out of the body & hardens the solids. But these effects are always frustrated in proportion as the Alcohol is diluted with water which it will always be in our System so as to have more of these effects. Wine then or Brandy must be supposed to act merely on the Nervous System, which it doth first as a stimulus afterwards as a Narcotic. The increased action of the Heart & Arteries induced by it is from some unknown cause determined to the head, whence it's sensible effects there. Afterwards it impairs the Nervous power producing Inertia & a state of Sleep during which the Stimulant effects subside, but the body is left weakened, irritable, anxious, & exposed to Potentia Nocentes. These are the effects of

of the Vegetables as Acescent which probably contains 148.
the wholes of their effects. Gaubius further considers
their Alcalescent effects, but these we cannot allow.
He considers them with more propriety as Aromatics,
but some of the effects imputed to them as such cannot
be easily supposed. Most of their effects are to be
attributed to their Stimulus on the Nervous
System. By this they promote the Action of the
Stomach which prevents the Acescent fermenta-
tion from running too high; hence they are so
proper in the warmest Climates. By their repeti-
tion they may weaken the tone of the Stomach
but what effects they induce on the System is
less apparent.

We are now to speak of the noxious effects that
may arise from our Animal food. This as con-
taining the most Nutritious food has the great-
est tendency to produce Plethora. It is too the chief
Source of an Alcalescent State in our fluids. In
what circumstances this effect of animal food par-
ticularly occurs is not easy to say. It will do it the
more as it is more or less putrid before it is
taken in.

It appears probable that without a cold climate ob-
structing perspiration, or some such cause, this
Animal,

Animal food will not induce putrefaction, per- 119.
haps even would not do it then if it was not
for the common salt in salt provisions, which may
have a share in inducing an Ammoniacal state
in our fluids. It is proper here to determine what
are the effects of over proportion of vegetable or
Animal food in our Aliment. It is plain that
Man is intended for both, and many instances of
persons subsisting long on one or the other without
harm. It seems agreed that Man cannot live on
Animal food alone; but it is doubted whether
a Man may not subsist on vegetables alone. Se-
veral instances of this in fact as in the Bramins
who are said to enjoy very good health and to be
in general long lived; many instances too of par-
ticular persons in these Countries. It seems probable
then that if they avoid the bad effects that would
arise in the prima via men may subsist on vegetal
food alone, but it may be doubted whether this
would fit men to undergo the labours of civil
Society. Perhaps Animal food is necessary to
enable Men to resist several potentia nociva acting
on their System, especially Cold, hence more Animal
food is used by Men as they recede more from the
Torrid Zone. We conclude then that vegetable food
is

is sufficient to support the system independant of the affections of the *Prima via*, and that in persons of a sedentary life, in a temperate climate, & defended by cloaths & houses the less Animal food is used the better

We shall next consider the sensible qualities of our Aliment as heat & cold. It is proper to move a question here, what are the effects of food a little below the Temperature of the human system in opposition to food taken in below 62° & appearing cold. It is sufficiently obvious that drink taken in cold is at first a Stimulus to the Stomach then to the whole system, & is very salutary. Drink approaching near to the human heat doth not give this salutary stimulus. It has been even the effect of relaxing the Stomach & system, tho' this operation is difficult to understand. It seems not without some reason then that an eminent Physician laughed at warm Fomentes given to warm the internal viscera. Yet we cannot agree with him, but suppose that any additional heat will occasion an accumulation of heat in the internal parts which are always losing to the external ones as these are to the external air, & that the relaxation induced by warm drink is owing to the increase of heat. The bad effects of Tea have oft been handled, but

but seem much exaggerated by Dr. Gaubius. Many of them would arise from an equal excess in the quantity of Cold water. Warm Water considered in any respect has not the effects here attributed to it. The chief effects of Tea drinking is to be referred to the herb itself. In a strong dose it may prove Emetic, and all such matters seem pernicious to the system. It has particular bad consequences in relaxing the tone of the Stomach, and in producing the effects derived from thence. But many of the effects mentioned here arise from a complicated cause, sedentary life, warm chambers, excess of venery &c.

Now of the effects of Cold. When cold liquor has, the effect of Stimulating the fibres & constricting the Pores &c it will have the other effects mentioned by Gaubius. But from its various uses with impunity it appears how much the effects of Cold depend on the relative state of the body. It is a matter of importance to determine when it is proper in fevers to throw in cold or when warm drinks. We generally avoid Cold Drink in these climates but it was much used by the Antients. We would say that as Cold drink has remarkable effects in inducing Inflammation

in Inflammatory states the use of it would be dan- 152.
gerous. On the other hand in all general fevers
cold drink is the most proper. Accordingly in Rus-
sia it has been practiced to use cold bathing to cure
Fever particularly the Petechial ones. On the whole
cold drinks are more proper in warm than cold
climates, in summer than winter.

There remain only now two particulars, as 1. The
effects of too little Mastication. The want of this,
must retard digestion & by keeping the Aliment too
long in the Stomach may have the effects imputed to
it by Gaubius. The last particular with regard to
diet is relating the time of Eating & Drinking. The
natural rule of this is the presence and absence of
Appetite; but the affairs of Society require stated
times which our System easily accustoms itself to.
To frequent meals besides the effects here mentioned
will have that of increasing the fever which we said
prevails at this time. It has been disputed what is
the most proper time for the principal meal. This ought
to be before the body has been properly exercised.
The chief exercise of the day ought to be over for this
reason too that exercise is not proper on a full Sto-
mach. Exercise of the Mind equally prevents digestion.
It is reckoned very pernicious to Sleep on a full Sto-
mach, but we find a natural propensity to Sleep
after

after a full meal and this extends to other Animals. The bad effects of full suppers must rather be imputed to some other cause. We have before observed that there is a constant accession of Fever in the evening in our System, and the aggravation of this fever by a full supper will perhaps account for this problem.

We proceed now to speak

De Intempestivo Remediorum Usu.

This is properly confined by Gaubius to the improper use of drugs in general, nor can it touch their particular effects. It speaks only of the mischiefs arising from the use of Drugs when they are not necessary. Medicines don't like Aliment enter into the Composition of our Solids & fluids, but alters their state and condition greatly. If the body is then in the best state imaginable this change must be for the worse. It is alledged in opposition to this that some Medicines act only on the noxious matters they meet with in the system, & if they meet no such pass off without operating at all. This is said to be the case with Absorbents; but this is fallacious, for Acidity is always present in the Stomach. It's presence is necessary to Assimilation, but when too great a quantity of it is not present it is taken up by Absorbents this must be attended with

with bad consequences; accordingly absorbents are said to promote putrefaction. The position extends to all other medicines, & that are none which are capable of doing good that cannot also do harm. But further, medicines in small quantity in general make very great changes on the System and are justly observed to approach very near to Poisons by Gaubius. This will make us very cautious in their use when they are not necessary. Even med^s capable of no great effects may be hurtful. In the first place the body being habituated to them will not have the benefit of their effects in sickness. A good old observation is, that the first Administration of blood letting seldom fails to cure the disease. But further, the use of Stimulants makes us insensible to natural Stimuli. This often happens in persons who have accustomed themselves to the use of Purgatives. In general the use of all med^s induces a variety of habits which become necessary and expose us to various hurtful causes. *Fuge medicos & Medicamenta si velis esse saluos*, was the admonition of a German physician. The opposite conduct of this induces various ills. Persons on the least change of their System have recourse to Physicians when these changes would have been spontaneously obviated & corrected by the Vires naturae.

Nature Conservatrices. But it is said that the
predisposition may be corrected by the means of
Physic; this however is best done by Regimen and
not by Medicines. It would be worth while to
consider whether that variety of life recommended
by Celsus is to be followed, or a strict regimen suit-
ed to particular predispositions & particular
times of life; But our time will not allow of
this.

We proceed now to speak of Poisons. We cannot
speak much of this without entering into too large
a detail, so we must speak of these in general.
The first thing to be done is to limit what are Poisons.
Perhaps we must be contented with the vulgar
notion that Poisons are such as being conveyed
into the body in small quantities have a tendency
to destroy life. Gaubius seems to exclude Mechan-
ical Poisons in his definition. It were to be wished
that we could determine what Poisons act on the
Nervous power. The enumeration of Gaubius is
extremely correct; his Mechanical poisons must
be excluded if we allow a *vis singularis* to poisons.
The next class is of the *Acria Chemica*. These sh^d
be confined to the Caustics & Corrosives or such as
have the power of destroying the Texture or
mixture of the system. Where these directly
destroy

destroy the part to which they are applied we cannot consider them as poison. Neither can we in another case when they affect the whole system in consequence of an affection of a particular part, to which they are first applied. The 3^d head is of those possessed of a remarkable putrefactive power. Any substance that is introduced in small quantities has the power of assimilating the mass of fluids and making them putrid may be allowed to be a poison. Some are supposed to affect the mixture of the fluids as Laurel water. The greater part are such that acts as ferments. We would doubt this much whether any can act by chemical mixture. Even the ferments seem to act first on the nervous power, and in consequence of the Atonia thereby induced dispose the system more to putrefaction. What follows are such as act on the nervous power. The first are the Astringent Poisons observed in Metals and particularly Lead. These induce constriction on the part to which they are applied, & act more readily on the living than the dead fibre. Their effects are propagated from the extremities to the origin of the nerves. This constriction is without any considerable stimulus diffused to the rest of the system in which they differ from Narcotics.

The,

The last are what immediately affect the vital principle. Of these the chief are the Sedatives and Narcotics whose effects are diffused over the whole Nervous System. But Haubicus observes that they may act in other ways besides the Mobility of the Nervous power being destroyed; his Observation seems confirmed by the Phenomena observed of various poisons. On the whole of this subject, I would observe that Dr. HEBERDON has given lectures on this subject in the College of Physicians. If he has not made any great discoveries he has corrected several Errors. I would adopt his division of Acrimonious & Intoxicating if he did not contain several of the Chemical Acids under the Acrimonious.

Dr. Haubicus next mentions two principal heads of Miasmata and Contagiones, which if to be considered as Poisons are of the utmost importance in Medicine. These two terms ought to be carefully distinguished. Miasma implies any contents of the Air which may be noxious to the human body. It seems to be then any corruption of the Air. Where Miasma is used in opposition to Contagion we must either exclude Communication or suppose it unknown. Contagion always implies a matter in the Air ^{when}

when introduced into a body has the power of mul- 158.
tiplying itself so as to be communicated from
that to another body. In many cases we are un-
certain when the disease arises from Miasma
or Contagion, and therefore refer it indiscriminately
to either; even Sydenham uses the term Miasma
often than Contagiones. But the extending of
Miasmata too far is attended with errors in prac-
tice and causes unnecessary fears. Most Epidemics
depend rather on Contagion than Miasmata since
we can in general have them as arising from con-
tact. Even the Miasmata in the air have probably
arisen originally from the human body or from o-
ther animals analogous to it. Even the effluvia from
a sound human body may be reabsorbed by other
persons and prove hurtful. The Effluvia of persons
inhalant are oft born by them with impunity probably
from habit when they are very prejudicial to others.
This explains the use of Contagions which probably
arise from human bodies or those of similar Ani-
mals and which may perhaps be innocent to the
persons from whom they arise. The Effluvia are
changed by mixture or diffusion in the air, so
that it is probable they are never carried far from
the person affected; hence they are accumulated or
concentrated

concentrated in these chambers, which will be
 more or less according to the free Ventilation of
 these chambers. We further find the contagion ad-
 here remarkably to the cloaths &c of affected per-
 sons and for a long time adhering to them; hence
 contagion is chiefly propagated this way. Dr
 Gaubius insinuates that Miasmata may be from
 all the sources affording Inhalation to the Air.
 This is possible, but we must not think of possible
 sources, for from the powers of mixture & diffu-
 sion in the Air they will be connected. We
 have already said that the various contents of
 the Air may be referred in general to Mephitic
 Air. We attempt to correct this chiefly by Diffusion,
 because we know little what mixture can do.
 This however deserves our most serious considera-
 tion; if we can mix the Mephitic Air with com-
 mon Air we may prevent its bad effects in ge-
 neral. There is much Mephitic Air at the bottom
 of wells. But this is ^{tr}connected merely by alternate
 motion of Buckets going up & down. This may
 have consequences on our practice in several cases,
 but this mixture with common Air cannot al-
 ways be procured. No matters that have so
 much the power of fixing Mephitic Air as
 burning

burning bodies particularly Sulphur. This ap-
 pears to be a curious problem how matters wh-
 themselves afford this Mephitic Air can pass off
 the power of rendering it innocent. The fact how-
 ever is evidently proved in the case of Fermenting
 liquors where a small quantity of burning Sul-
 phur will immediately check fermentation. The
 mephitic Air has various bodies adhering to it
 which may be affected by the Acid of the Sulphur
 Fumigation with & would be a convenient ap-
 plication to destroy Mephitic Air. The burning of
 Gun powder has also been used, the explosion here
 by the strong agitation it gives to the Air probably
 shakes off the Mephitic Air more powerfully. In
 a Sea Fight last war there was a ship with Con-
 tagion of Board, which subsisted in spite of all
 the means used to correct it. 28 Barrels of Gun
 powder were used in that ship, and the Contagion
 appeared no more after the Fight. So far as Conta-
 gion acts as a poison it confirms our Theory with
 regard to Fever. Some contagions act more readi-
 ly, others not without the concurrence of Heat
 or Cold according as the Vigour of the vital
 principle is more or less. It is observed by
 Writers

writers on plagues that new married men are more exposed to the plague; it is probably owing to the relaxation of the system. Dr Gaubius proposes several curious questions here. An omnis Contagio Animala? We cannot admit that they are as this has been observed only in a few species of Contagion; besides Contagion may be both the cause of the effects on the Nervous power & of fermentation in the fluids, as also of the production of the small Microscopic Animals observed, nor are we to infer hence that such Animals are the cause of all these effects. With regard to the next question we cannot conceive that the Imagination can have any effect on the fermentation of the fluids. All the stories told of this kind only show that Fear is a very strong concurrent cause with contagion. With regard to the Pabulum we see them act uniformly & steadily, but cannot therefore suppose them of the same immutable nature. Tho' an Antidote to particular Contagions may not be impossible, yet it seems equally improbable with the Philosophers Stone. How Contagion propagates itself is a Mystery, but this is in common to all Ferments. Gaubius is puzzled to find out why these Ferments act only on

on the living body. We may attribute it to our fluids suffering some considerable modifications from the states of the vital principle. Another question should be taken notice of here. If contagion acts as a ferment on the fluids these after once undergoing this process will not suffer it again. This is easily explained in fluids ^{out} of the body; but the fluids in our body are so oft changed that we might expect them capable of undergoing the same fermentation with those before them. May we impute it to Impressions on the nervous power becoming weaker & weaker till at last they are none at all. The fact is undoubted, but persons are attacked with the Plague more than once. Shall we say then that the plague tho' of the same general appearance has particular modifications at each time it returns so as not to contradict the general position.

As to what follows our time will only permit us to select those particulars in which Gaubius is to be reprehended. The operations of the mind may be considered as simply intellectual, or as attended with volition. This gives the two divisions of Gaubius. With regard to the operations of the intellects

intellects. It is probable that the Soul in thinking is under actual motion of its material parts. But thinking is undoubtedly connected with the material part, nor is any separate independant action of the Soul to be omitted. The motions of the Sensorium in thinking have their proper measure. If the motion is excessive it may have several pernicious effects on the System. Dr. Gaubius goes further in pointing out what these effects are, but he uses a number of loose terms & several hypothesis which cannot be admitted. The whole is that excess of motion in the Sensorium weakens its own power and so that of the whole System. Gaubius adds properly that these motions prove a Stimulus to the Sanguiferous System; further, that when the Mind acts intensely Muscular motion ceases in proportion to which the *Liberatorum morbi* is to be imputed.

The 3^d fact is that variety of Studies renders excessive study more tolerable. We may easily conceive that the action of any one part for a long time will affect the Sensorium much more than when alternately different parts are used. Further, Occupation of one single object must be hurtful, because attention to that has the effect of restraining the nervous

Nervous influx into other parts. Thinking is a Stimulus to the System, and so it might be supposed that the want of this will occasion the System to languish; but no such thing seems to prevail in fact, the reason is that Muscular motion is sufficient to preserve the powers of the System in a proper state, or that the external impressions are sufficient to prevent the System from languishing.

We now proceed to the

Vis Noxia Animi Perturbationum.

Here the effects are more evident. To give a System on this subject. The Passions may be considered in two views, first as they are agreeable & pleasant, or disagreeable and painful. The agreeable & pleasant are always Stimulant, the disagreeable Sedative. But the Passions may also be considered as actual or restraining from actions; these leading to action are properly Stimulant, the others manifestly Sedative; their effects are variously modified according to their degree. Again, few of our passions can be considered in this simple view, most of them are very complicate. Love is sometimes full of Hope and Confidence, sometimes of despair and jealousy. They are also very complicate if considered as actual or restraining from action, thus fear may have different

different effects, a coward obliged to fight is a very dangerous enemy. These are the foundations on which we are to judge of the effects of the passions; further whilst the passions are Stimulant or Sedative to the whole System they have oft a particular relation to various parts. This might induce a Dissection of Physiognomy and some other particulars, but we are restrained by time.

We come now to speak of the

Excessus Somni et Vigiliarum.

The Exercise of the mind and body have their stated measure not only with respect to degree but also to duration. Excess of either of them must be hurtful to the Stomach. The same principles apply to the excess of duration as that of degree, excess of waking overstrains the muscles employed to keep the body erect, overstrains the Sensorium, occasions waste of fluids & so increase the Acrimony of the remainder &c. Excess of Sleep induces a Torpor of the Nervous System, by diminishing the action of the solids on the fluids it prevents their motion and increases the Laxity of the Solids, it diminishes the Excretions &c. &c. A question occurs here about the time of Sleeping & waking; all times are not equally fitted for these purposes. The very rest
of

of Animals in the night gives silence, together with the darkness, & the cold of the night air too admonishes us to sleep then. But further the heavenly revolutions have some effect in producing an analogous revolution in our system. We have always an accession of Fever and quickened pulse soon after noon & another soon after midnight, but this is not confirmed by a sufficient number of facts to prove that this cannot be connected by habit. It appears however that the Sun has very great influence on us. The body then should be at rest in order not to be irritated at this time of fever which is greatest soon after midnight. Those who keep late hours tho' they take an equal proportion of Sleep never have so hale healthy a look as those who keep earlier hours.

We go on now to the

Excretio et Retentio Inordinata.

We have before spoke of the effects of an undue balance in general, what remains to be considered here is when the Excretion or Retention are faulty with respect to any particular fluid. These however rather belong to the Actiones Lese and come under the head of symptoms rather than of causes. I shall only give you a few cursory remarks.

With

With regard to the Saliva it is known to be necessary to the Assimilation of our food, this Assimilation then will be imperfect if the Saliva is diverted to another course; accordingly when the Saliva is thrown away the Marks of Indigestion appear & particularly of Acrescency.

The want of a small quantity of Acrescency cannot affect our Mass of fluids as supposed by Gaubius, he considers Costiveness in the view of hardened Faeces solely, but this do not exhaust the whole effects of Alvus Constricta & Tarda, the latter brought on induces a Torpor in the peristaltic motion of the intestines, and this is propagated to the Stomach, hence this has so considerable a share in all the symptoms of the Hypochondriasis. He next considers the effects of the interrupted excretion of Urine and of its accumulation in the bladder; he should have added to this the accumulation in the Ureters and Kidnies. The effects are such as flow from its passing out by other passages or inundating other parts particularly the Brain without the least marks of Acrimony. On the subject of perspiration he is very short. Its effects are chiefly to be confined to the Segments or to the Diminution of the quantity. The effects are those

those of the quantity and quality, those ascribed to
 the last are difficult to be conceived. Some of the
 Symptoms ascribed to increased perspiration as
Animi deliquium, *Mors Subitanea* &c seem not to
 be well founded, sweating has the same effects
 but in a higher degree. The aptitude of persons to
 catch Cold during sweating may be imputed to
 increased sensibility by the heat. When the ba-
 lance is thrown very considerably on the exter-
 nal parts, as by sweating, a sudden check to this
 will have more considerable effects. The effects
 of the *Immodicum seminis profluvium* are put
 on a proper footing by Gaubius and not imputed
 to the loss of any particular spiritous humours.
 The fullness or emptiness of the *Vesiculae semina-
 les* has very great effects on the tension & laxity
 of the system; its opposite the *Abstinencia nimia*
 is a very rare occurrence in the Economy. I have
 seen instances of *Salivariasis* & *Nymphomania*,
 but these occurred in persons rather addicted
 to the other extreme. The effects of the *Lactis*,
Lactis are to be attributed merely to the quan-
 tity; if it has any effects on the *Vis Nervosa* it
 must be by affecting the Tension; the suppres-
 sion of usual evacuations formerly explained

as producing Plethora. It's opposite will come 169.
more properly under the head of bloodletting.
What next follows on Cellular Concretions we
shall endeavour to speak of more systematically.

De Calculi Origine et Acumentis.

Calculus Concretions can scarcely be supposed
to be collections of matters before diffused in
our fluids; most probably it is a separation of
matters before dissolved. With regard to diffusion
even in the prima via we may observe that dif-
fused matters are less apt to form solid concre-
tions & rather fall down in a loose powdery
form. This must be the case in the prima
via appears from the quantity of diffused
matters which must necessarily be in them;
this will easily appear from the quantity of
of dust taken in, yet concretions are very
rare there; ^{these concretions are commonly to a Nucleus} but further, there, and such are common-
ly from solution. We set out then with this
proposition that they were before dissolved in
the fluids. Dr Gaubius finding them to be cal-
-led Earthy Concretions & insoluble in water after
their separation is at some pains here to obviate
this prejudice. There are many similar in-
stances

The Calculi Originis et Momentis

(a) If we would apply to the Absorbent System any thing like an Elective Attraction (as seems very likely to take place) they might be admitted.

stances in natural history. It is then strictly dissolved matter, how is this separated? The most considerable means of separating dissolved bodies from their Menstrua is by cooling the mixture. Offby restoring the heat of the wine we can make it dissolve again the sediment it before deposited; but neither the cause and therefore not the effect can exist within the body so as to account for such depositions. 2^d Dissolved bodies may be separated from their Menstrua by evaporation. Nothing of this kind can strictly take place in our body. But stagnation abstracts the fluid parts and must therefore either be supposed to separate diffused matter or to have some effect in the way of evaporation. Another way of separating dissolved bodies is by abstraction of Air from the mixture; in like manner addition of Air in some cases occasions precipitation; both of these may take place in our bodies but we know nothing about it. A fourth means is by precipitation or elective attraction. The attraction of adhesion seems sufficient here to occasion precipitation, thus the application of certain dry & solid substances, not even such as absorb the dissolved matters, seem to give occasion to precipitation. This seems

seems to take place in the Urine particularly. Any extraneous matter getting into the bladder becomes a Nucleus to which the saline parts of the Urine adhere. This is the chief means of increasing Urinary Concretions and will account for many of them; but in most concretions we must still look for some other cause. 1st We may conceive that any part of the Inner surface of the urinary passages may become dry, and in this state it will answer the same end with the extraneous body just mentioned. An analogous instance to this in the dryness of the blood vessels occasioning Polypus, so Inflammation of the kidneys may occasion a concretion which will lay the foundation of larger ones. But are there not other causes besides these? Those commonly supposed are not touched on yet. Let us suppose the Urine to become a supersaturated solution, suspending the whole during motion but letting it fall on rest; this is what is almost constantly supposed by Dr. Haubius. But there is a considerable difficulty in this, for we know no similar instance in Chemistry of a solution not supersaturated depositing its contents on rest; but in the blood we suppose the coagulable lymph to be dissolved in the serosity, a part however is only diffused, and on rest this is deposited. But
admitting

These Cases may either be 1st a particular state of the Mass of fluids producing a large quantity of the Matter thus to be passed off by the Urine; or, 2^d a particular state of the Kidnies whereby they are more disposed to wash off this matter. That this Supersaturation takes place in the Blood is scarcely to be admitted for the reasons here offered.

admitting the possibility of this case it would be
 very difficult to assign its causes. These will either
 be the secretion of a large proportion of the matter
 to be suspended in the Urine or the greater aptitude
 of the Kidneys to wash this matter off. The first is
 possible, but we don't know when it happens or
 from what source. It doth not depend on any par-
 ticular Aliment, we suspect Dr Haller's observations
 that calculi are most frequent in England, Holland,
 & France, and impute this entirely to the greater
 number of operators in those countries; but the cal-
 culus Diathesis happens even in fetuses of women
 who never showed any such disposition themselves;
 it is not more frequent either in the Lyder Counties
 of England or on the borders of the Rhine. If from
 supersaturation, we should expect them more fre-
 quent in different parts of the body; a combination
 of calculi in different parts is a very rare occurrence.
 It doth not depend then on supersaturation in the
 Blood vessels; but supposing calculus diathesis to be
 owing to the fluids it is very difficult to say
 whence or when it arises. Gaubius talks of a Ter-
 reum principium, but we neither know the fact nor
 can conceive its effects; much however has been
 talked of Insoluble Earths and petrifying waters,
 accordingly

accordingly they are carefully avoided, but this is a remarkable fact that undoubtedly these petrifying waters give relief in calculus concretions, and are really Lithontriptics: the reason is from their Absorption of Acid. But Dr Gaubius is obliged to have recourse to another matter Acidum in terra defixum, but all this is imaginary. We have a Symplic Composition of Acid and Earth, viz. Allum, but there is no proof of any such prevailing in our system. Dr Gaubius always hints at this which is a mistake that Earthy salts are more liable to separate from their menstrua than any others. This cannot agree in the least degree to any except Selenites. Tho' this is present in the waters we take in there is no proof that this is taken in in a supersaturated state which yet is necessary to produce calculus concretions in the body. Various causes of the precipitation of these Saline matters in the bowels of the Earth, but as these cannot be transferred to the body it is probable that calculus concretions don't depend on these m. supposed by Dr Gaubius. The greater part of the remedies employed to cure these concretions are Absorbents of Acids. But yet there is no proof that these Act by decomposing the stone, & their operation is quite a mystery.

It is time now to take notice of the 2^d Supposition, that
Concretions

Concretions may depend not on the state of the Blood but a particular condition of the Kidnies. It seems pretty certain that there are constitutions which will form a stone out of any Aliment or blood. This is probably owing to the affection of a particular part, since we seldom find combinations of Calculus Concretions in different places in the same person. It is true that this particular affection may depend on a general state of the system. The gout is a disease of the joints but still has a particular connection with a certain condition of the system. The same may be supposed of these Concretions, and more especially as they are very intimately connected with the gout. This then appears to be the most frequent case in Calculi, and it is this we are to enquire into to account for their generation. We must be satisfied with having brought the matter to this point, I shall observe only that it will always be dubious whether the remote causes Accrescents furnish the calculous matter, or only act on the calculous diathesis. I know an instance of a Gouty person who on taking a little vinegar into his Stomach is seized with a Gouty Paroxysm. This will make us very difficult of admitting that Accrescents furnish the calculous gouty matter. There is no such instance of a supersaturated solution as above

above spoke of except in the blood. The matters diffused here must in several cases pass off in this undissolved state in consequence of increased impetus, debility &c. If there are Follicles in the Excretories it may stagnate there and give occasion to Concretions. This indeed is Hypothetical, but Dr Haller will scarcely allow it to be such and produces several facts in support of it. There may be such an Inflammatory State of the Kidneys as carries off this undissolved coagulable Lymph which may afterwards be retained in some part of the Urinary Excretories and occasion Calculi.

After this Hypothesis given on Calculous Concretions we proceed to the

Potentia Morbifica Animata of Gaubius. He doth not consider this in an enlarged view with regard to Contagions, but confines it almost solely to the case of Worms. The origin of these is still so much disputed, and their effects so difficult to explain that we shall pass over this subject altogether.

The next and last head of **Potentia Nocentes** is too obvious to need explanation.

We come next to the **Seminia** of Gaubius. A discussion of this point would take up too much of our time, and these Semina act rather in inducing

inducing Predisposing causes, of which we have already spoke, than diseases. The *Vires Naturae* *medicatrix* has been sufficiently spoke of.

We come now therefore to consider that part treating of symptoms. Every change in the state of the body observable by Physician or Patient troublesome or permanent is what constitutes a disease. It seldom happens that the body is not changed in more than one part at the same time; the whole then is called the disease, the particulars the symptoms. There is nothing of more consequence in Physic than to discern the species & degrees of these symptoms, and particularly their concurrence. The next thing to be wished is to assign them proper fixed terms generally allowed by all. For these 100 years past we have been much engaged in arranging the productions of nature which has been chiefly done by detecting their particular appearances and assigning them fixed terms. Until we have a proper *Delinatio morbi* in imitation of the *Delinatio naturae* we we shall never have a perfect *Nosologia Methodica*. When this is done it remains to adapt certain method of cure to each species. We are here
upon

upon a Dogmatic plan to mark the chief ap-
 pearances in diseases, and to trace these up to the
 Causa Proxima. Oft in tracing the Ratio Symptoma-
 tum we come only to the last Step of the Series
 of Causes and effects constituting the Causa Proxi-
 ma. This Ratio Symptomatum is not always to be
 obtained tho' frequently it is; but even where not to
 be obtained such an enquiry is of the greatest ser-
 vice since it leads to the Investigation of the
 species, degrees, & concurrence of the Symptoms and
 the Remote causes. It will bring out too several
 facts, for it must be observed that the chief facts
 in physic have been derived from Theoretical dis-
 cussions. Gaubius divides this part into 3 heads.
 This division is by no means a good one, he him-
 self gives up the Secretorum vitia. The Qualitates
 sensibiles alienatae might also be referred to the
 actiones laesae; but this would not be admitted
 without some dispute; we shall therefore consider
 them separately; they are such as cannot properly
 be referred to either of the other heads. Here would
 the enumeration above spoke of be difficult and
 our Ratio Symptomatum principally fails. We shall
 consider only some of the chief, And first the
 change

Change of Colour.

This is very obvious & if it could be properly explained would be of great use. Colour is first of the Solids and particularly the Cuticle; this differs much in different climates and different persons. The theory of colours is little known so this must be a mystery. The original colour & density of the Solid with that of the transmitting forms the natural colour of the body. We can account for several changes of colour; thus 1st it may depend on the solids, or 2^d on the fluids. It may depend besides on the greater or less quantity of fluids, on fluids passing into vessels not their own; we would admit the Error Loci so far, as also the Error adfusorem. To mark now the chief changes of colour that do happen, and to show their connection with these causes.

The whiteness of the skin may be owing to the vessels not being properly filled. This may be owing to cold preventing the proper entrance of the fluids into the vessels or the action of Astringents. A diminished impulse of the heart and Arteries will have the same effects; further Paleness may be owing to the fluids having now a smaller proportion of red globules; lastly, Paleness may arise from

from paler fluids effused under the surface of the body as in Oedematous swellings. The redness of the colour may be increased, first, by the increased action of the heart and arteries. The change is still more remarkable when vessels not before red now get red globules transmitted thro' them. This is still greater when the impulse is directed to a particular part as in the flushing of the cheeks. Redness in particular parts will be increased by effusion of red blood under the surface. It is disputed whether the colour in Inflammation is owing to the first of these causes only or also to the last. Dissections show that this last sometimes takes place, but it is difficult to say when it does. I suspect that these Inflamm^y tumors where much red blood is effused are most apt to turn to Gangrene; the fullness and deepness of the red blood will mark such effusion. This red colour frequently assumes a blue, purplish, or even blackish colour. The blue colour is the natural one of the veins. An enlargement of the veins then increases the blue purplish colour. If the blood is effused from the Arteries into the laxer Cellular Membrane it will assume nearly the same colour as in the veins, hence the colour of Ecchymosis. The skin appears black from

from external causes. The leaden colour is a mixture of these darker colours with paleness. This is frequently owing to obstructions in the veins, arising perhaps from a weakened Impulse of the Arteries. The Liver in Gangrene may also be a step towards the black colour appearing in mortifications. There is also a yellowness oft observed in the skin. This may be owing either to the Bile or to Serum changed in its colour. The different colours of Serum is difficult to account for. It is attributed to its Alcalescency & probable that actual putrefaction gives it the green colour. It is difficult to say when Yellowness is owing to Bile; that the serum may be thus changed should appear from hence that a yellowness has been observed in one half of the body. The yellow colour then in many instances is owing to serum either appearing thro' the vessels or effused. The concurring circumstances of relaxation of the Solids must also be taken into account, thus we find it in the case of Poisons spreading from the part first affected. The green colour is frequently owing to a mixture of the yellow with blue. The Ecchymosis is at first a black colour from the quantity of Red blood poured out; afterwards a part of the red Globules being perhaps absorbed a yellow

low or green colour succeeds.

We are now to observe the frequent changes of Colour as alternates redness & paleness. This is a mark of the Nervous power being affected & it seems to imply a Muscular power acting on the small vessels. —

Dr Gaubius next considers the Odours of the body, but has done this very imperfectly. Indeed we have never been able yet to reduce Odours to general heads. In the state of Odours there are great changes, the causes of which are out of the reach of our conjecture. — Passing over this we come to the Heat of the Body which we can better trace to its causes. We omitted this in the Physiology, and so shall supply it here tho' very briefly.

We must enquire into the causes of Animal heat. The nature of the generating power within us is much disputed nor do we know any probable Theory on the subject. With regard to the generation of heat in bodies we can observe that it is connected with an increase of motion in the parts of the body. There are two kinds of Motion observed in other bodies and seem to take place in Animals too. One is Mechanical Motion depending on impulse, the other is intestine motion arising without external Impulse

Impulse in the parts of bodies. This last is of two kinds, one that takes place in mixture, and it is probable that every mixture generates heat. This has never been transferred to the Animal body both because this heat is not durable, and that we know no mixture regularly carried on in the Animal body & in such proportion as to answer the purposes here required. Another kind of intestine motion is that accompanying fermentation. These are less momentary and frequently during the whole process are generating heat. The fermentations in the Animal body may easily be supposed to subsist till they receive a fresh supply of matter; this has been frequently supposed as a cause of animal heat. As fermentation is observed to be going on in Animal bodies towards Putrefaction, & this in other bodies is attended with heat. It is true that the Putrefaction in Vegetables generates Heat so as even to excite Inflammation, but several Physiologists have supposed this confined to vegetables and no longer to show that the same takes place in Animals. Even in the immense bulk of a Whale putrifying on the shore it is alledged that no great increase of Heat takes place. Yet we must own that there appears

appears of heat in Animals too, but not till they arrive at nearly the last state of Putrefaction.

The putrefaction too must be hurried on very fast and in large masses of matter; none of these circumstances happen in the Animal body. In dead bodies where putrefaction goes on to a much greater degree scarcely any sensible increase of heat is found. If we are right too in our notions of Scourgy we must add too this as an instance where the putrefaction is going on without increase of heat. In the most violent putrid fevers too it has been observed that the heat of the body was diminished tho' this was disputed; further, increased heat will be attended with increase of motion; how increased motion hastens putrefaction is not known except by increasing heat. In Inflammatory and putrid fevers the heat is rather in proportion to the increase of motion than of putrefaction. From all these considerations the doctrine of putrefaction is now almost entirely dropt. Almost all Physiologists have recourse to Mechanical motions. This has been supposed to operate in two different ways either by the motion of the particles of blood on each other to which we know no analogous instance in

in nature except perhaps in churning of Milk;
 but this is rather to be attributed to the fermenta-
 tion going on than Mechanical Agitation. Dr.
 Haller asserts that water heats on motion, but
 has no authority for this. The other more received
 notion is attributing Animal heat to the motions
 of the blood on the sides of the vessels. We have
 no analogy in nature to support this; two instan-
 ces are alledged, one of a Canon bullet which car-
 ried for miles has still a great degree of heat
 which has been supposed to be owing to heat
 generated during its motion thro' the Air; but we
 know other sources of heat here. But supposing
 it to receive heat thus this doth not apply to the
 Animal body, for the velocity is so excessive that
 nothing like it can take place in our System—
 The other instance is in the case of Mercury, ~~when~~
 being agitated in a trial indeed generates heat;
 but a circumstance happens here which has been
 overlooked, a portion is always changed to a
 dry powder, and it is to the attrition of this pow-
 der that the heat generated may be ascribed. This
 then is the attrition of Solids on Solids; but sup-
 posing that the Mercury acts thus whilst fluid
 still this doth not apply, as this is a fluid of
 such

such remarkable density. We know that the interposition of fluids between solids otherwise disposed to generate heat on attrition prevents this from taking place which is a strong objection to this doctrine. It is the same if we descend more minutely and have recourse to the particles of bodies returning the Oscillations. It is necessary too that there should be an inequality of surface whereas our fluids are applied to a most polished surface. Further our red globules are not applied to dry surfaces, all the Inner surface of the vessels being defended by humid Exudations. Even in the supposition of Douglas concerning the attrition in capillaries the want of velocity here is an unsurmountable objection. But further this Theory doth not solve the Phenomenon of Animal heat. One is the equality of heat in different parts; to account for this Dr Martin has shown great ingenuity in endeavouring to show in like manner equality of Attrition. He attempts to prove that the surfaces and velocity taken together are always equal; but this fundamental hypothesis of his is without foundation. If we take two broad rules of wood, apply them by their edges and rub them

them on each other with great velocity, great
 heat will be generated. If we take these together
 and apply them by their broad surfaces together,
 diminishing ~~the~~ proportionally the velocity of the
 attrition, no heat will be generated. But without
 insisting on this there is not in Animal bodies,
 a sufficient velocity of motion to account for the
 generation of heat even in the attrition of the
 Solids; but supposing his hypothesis admissible
 his measures are fallacious; may they depend
 on false principles supposing the deviations
 to be always equal & that every trunk diminish-
 es always in an equal ratio, so may conclude
 that the equality of attrition is by no means
 proved. But there seems to be no occasion for
 this to account for equality of heat since this may
 depend on it's very sudden distribution; but the
 degree of heat in different Animals is not in pro-
 portion to the velocity of the circulation. Further
 the velocity is much greater in an infant than
 an adult whereas the heat is probably the same;
 it is true that in most instances the increase
 of heat attends increase of velocity, but it doth not
 follow that the one is the cause of the other. They
 may

may have the common cause, viz, the increased action of the vessels increasing the Oscillations of the Nervous power in the moving fibres. The equality of heat in different persons whilst the motion is very different can more easily be accounted for on another supposition which we shall now proceed to explain.

We have nothing but conjecture to offer on this subject. Suppose that animal heat depends on the Oscillations of the Nervous power between the Organs of Sensation & the Sensorium, and still more considerably between the Sensorium and moving fibres. This is agreeable to all our notions of heat which may be demonstrated to depend on the Oscillations of a subtle fluid present in all matter.

Besides, the Aether here then appears to be a particular mixture adhering to our medullary fibres. All fluids are non electrics & perhaps connectedly with, they are unfit for the generation of heat. All dry bodies in which heat ^{be} generated are Electrics. This then confirms our supposition, we are still further confirmed in it from the remarkable effects of heat & cold on the Nervous power.

Further)

Further if the Other of our Nerves necessarily accompanies the Medullary fibre it will be a determinate matter there, hence it will be the same in Animals of the same species, which accounts for the remarkable equality of heat. Tho' our Nervous power is readily disposed to Oscillations it doth not without external Stimuli. The most common motions in our System are derived from its own actions. This shows the Connection of heat with the Arterial system, and it will account for the equality of heat in different parts if we take in the ready communication of heat from one part to another; hence the velocity of the Circulation has such influence on heat, viz. as this necessarily proves a Stimulus to the action of the vessels, hence we may understand what Gaubius says of the causes of increased heat. The *Nimis Oleosa Sanguinis Diathesis* seems absolutely without foundation, nor are oily fluids from motion on each other more liable to generate heat than any other matters. Amongst all these causes only the first and last are to be admitted, and these only so far as they increase the action of the Solids. To add here one or two observations.

Ph

The instances of partial heat and cold is better explained on this hypothesis than any other, thus whilst the hands are hotter than other parts this is accounted for from the increased determination to those parts, but if this heat on the Palms is greater than the internal heat it would seem that this was owing to the increased action of the vessels here generating new heat. Cold requires a different explanation. In this case we perceive the want of that oscillation which usually takes place in the nervous fibrile; further, we have alledged that with regard to this internal heat the generating power is increased in order to keep up a balance with the external Air. Tho' we have sources of heat from external bodies colder than our internal heat yet the heat on the surface is not increased but by bodies at least as hot as our internal System.

The only remaining of Qualitates Sensibiles lese is the Magnitudo Acuta. Dr Gaubius has pointed out all the cases of this, but without giving a proper Arrangement, we have therefore thrown the whole into a Table in order to show the whole in one point of view. Our business here is to consider

Tumors

Tumors as connected with causes, and this we
 have done here. We might have made two ge-
 neral heads, 1st of Increased Solids, 2^d of Accumu-
 lated fluids, but thought this of ours more clear.
 On extraneous bodies we have not ventured on
 any subdivision, perhaps the chief of these are
 such as are generated in the body itself, the vermes
 and Calculi. A particular Animal has lately been
 pointed out of such a structure that it by Absorption
 of fluids it can expand itself to a very consider-
 able bulk, it is probable that this gives the Tu-
 mors called Hydatids. In the Prolapsus we have
 not in fact a Magnitudo acuta always, but we
 have an increase of size in a part where it was
 not before. The 4th head prevented our making
 the division to consist of two general heads. We
 have rather mentioned a few instances by way
 of Illustration than given the whole of them. Under
 Sarcoma we include all increase of the soft parts,
 this is a very general title comprehending a variety
 of Tumors. Sometimes it may be an organized
 increase, sometimes nothing besides cellular mem-
 brane. The Condyloma is properly the induration
 or Calluses formed on the surface of the body. The
 Verruca

Verruca has been confounded both with the Condyloma and Sarcoma. The white swelling is rather a fungus articuli, as Reimarus has observed, than a dropsy of the joint as Sauvages thinks, and therefore properly comes in here. In the 5.th head it is necessary to explain why we here subjoin the term *navus*. This is of two kinds either moles or what are called flesh marks, which manifestly are depending on an increase of vessels, we therefore gave it a place here. The *Hydatidis Sauvage* means only distention of the lymphatics. In the next head we have placed *Anthrax*, tho' it rather comes under the 7.th head. In order to show the mixture of these we have employed the term *Ecchymosis* in a more limited sense than *haemorrhoea*, confining it to effusion of blood. *Petechiae* have been considered as a species of *ecanthemata*, but if they are such they are not confined to any particular duration or time like the other *ecanthemata*. The *mariscæ* are undoubtedly very often effusions of blood into cellular membrane and not always simple varices.

We have divided the head of fluids effused according to the nature of the fluid. The serum is

is further distinguished according as it is changed in its nature or not. When not unchanged it differs in the places in which it is effused. The Hygroma is the Synonym: of the Hydalis Auctorum. Authors have not distinguished properly between Edema and Anasarca; thus in Edema which is purely topical independent of any general affection of the System, that Anasarca which depends on a general affection. Ascites is sometimes used by Authors for water collected in any cavity even in the cellular membrane, when the water is accumulated in any particular part of it, but commonly it is confined to the Accumulation of water in the Abdomen. Perhaps the Hydatis should come in here, but dare not assume it under the general head. — The 2.^d head of Serum is where it is effused in a condition to be converted into Pus. Whether it is always thus or only when it is disposed to wash off a part of coagulable Lymph as is perhaps more probable.

We have next mentioned Air tho' with what propriety is not certain, yet in cases of Air getting into wounds and swelling up the whole body such
an,

an effusion of Air seems to take place. Whether the rupture of Aerial membranes may cause Emphysema is not certain; have added Tympanitis here tho in a particular sense, understanding by it the effusion of Air into any of the Cavities of the body. The most common case of Tympanitis is Tympanitis Intestinalis which is not properly an effusion. Next follow the effusions into Cavities preternaturally formed by diseases. This contains Encysted Tumours which is a difficult subject. The first division of these is according to the fluid effused. Under Cystis Aqueosa all encysted dropsies are contained.

Our next term is improper owing to the hurry in composing the table; the nature of the Bronchocle is not very certain. Some place it ~~under~~ in the Thyroid Gland, but I have seen it begin on the right or left side and not in the gland, it seems rather to be a tumour of the Meatomatous kind. Of the Gummata I cannot speak with precision; it has been applied to nodes & Leontoses but is not confined to the bones. Astruc has given a particular Idea of this matter. The Ganglion is a Tumour in the Membranes & Tendons, containing

forming a glaucous matter which may be cut into without danger.

Next follow the effusions on the surface of the skin; of this kind too are exudations in the membranes lining the sides of cavities. We have not yet come to any conclusion about Lepra, we mean by it here an exudation concreting into a Crust. The proper Tinea is confined to exudations from bulbs of the Hairs as appears from the cure of it. The Achot is what is oft called Crusta Lactea. There are many concretions on the surface resembling this.

Next follows our 7th head. We distinguish this into two heads as they affect the soft or hard parts. The first of these is again divided into that with increased impetus and without that. The first of these is Inflammation which we distinguish according to its seats into Phlegmon, Erysipelas and Rheumatism. The Inflammation of Cellular Membrane seems accompanied with effusion of matter apt to form Pus, whereas the Erysipelas is not. The Rheumatism hardly ever terminates in suppuration unless Phlegmone supervenes. We have made several species of Phlegmone not so much from the parts destined to particular functions as from their structure. The

The Turrunculus is an Inflammatory Rile attended with effusion of Serum. We should have mentioned too the several species of Erysipelas, but know not how to fit up this plan. We distinguished Phlegmon and Erysipelas from their termination as well as their seat, the former admitting of Suppuration the latter not; but these two distinctions interfere, whence their limits are not properly settled. To Rheumatism we have subjoined the Arthritis because as an Inflammation it has the same seat; this however doth not confound these two together. Next follows the Schirrus which we make an indolent tumor. This term is not used with precision by Authors, some confining it to Glands others employing it more generally as we have done. In the Conglobate Glands the affection is more uniform owing to some Acid matter taken up by the Absorbents and deposited in these. It would be proper to mark all these by the general name of Rube whatever part they affect. The Scrophula is put down here as being in all probability an affection of the Lymphatic System. Under the next head we have mentioned as a curiosity the Parapleuritis, this has lately been spoke of by an Italian Physician as an attendant of the true Pleuritis which leaves a Schirrosity behind it

it. With regard to the Exostosis we are not certain whether we are right in placing it in the Bones, we rather think with Du Hamel that it most frequently arises in the Periosteum the layers of which afterwards harden into Bone; but in some cases the tumor is undoubtedly situated in the Bones themselves, this finishes the magnitudo Aucta.

We think it proper to pass over the Secretorium Vitia with Gaubius both because they may be commonly referred to the Actiones Lese and that they more properly make a part of the Semiotics, further their rationale is not well understood. Passing over these we proceed to the Actiones Lese, a Distribution of these is difficult, but the common division answers very well. The first divides them into such as are common for both sexes and such as are peculiar to either. The first we subdivide into Animal, Vital, and natural; we cannot enter into a criticism upon these terms. The Animal functions are those in which the mind is affected by Impressions made on the body, or again the body is moved in consequence of some changes induced in the mind. The vital functions are those immediately necessary to life. The Actions of the heart & lungs & of the Cerebrum as necessary to these are comprehended under this. The natural

natural functions are those intended to support the System as the Chylopoetic viscera, the System of Nutrition and the various Secretions. There are some questions which may perhaps be referred to more than one of these heads, but still it is not worth while to change this Arrangement.

I shall begin with the Animal or the Organs of Sensation and Motion. There are certain general affections which cannot be easily referred to any particular Organ, viz, Dolor & Anæsthesia. I should wish to enter into a full discussion of these matters, but our time will not allow us to enter on it. In these simple perceptions we cannot expect a definition, but as pain is oft used metaphorically it is proper to limit its meaning. We before mentioned three degrees of Disagreeable, Uneasy, & Painful; this last or bodily pain is what we are here to speak of. On what particular state of the body doth this depend? The causes seem to be all such matters as set the particles of the Solid matter of our Nerves at a greater distance from each other or whatever threatens a solution of continuity. Gaubius allows of this, but thinks this doth not exhaust the whole, In the first place we see sharp points or edges are a principal means of producing pain. 2^d All modes of external impulse with a certain degree of force applied

applied lengthen the fibre and therefore set the particles at a greater distance from each other. It is easy to apply this to other Senses. Light & sound give pain only under a certain degree of force of Impulse. The same Theory may be admitted with regard to odours if we can distinguish between such are are painful and the others. These which are painful are only such as are most volatile and therefore act with greater force of Impulse. In the 5th Sense of Taste there is some difficulty. The painful tastes are the Acrids and nothing more common than to suppose that Mechanical and Chemical Acrids are similar and act in the same manner. If this is admitted our System is complete. We may observe that the most remarkable Acrids are Saline, and since these in concretion so readily admit an angular form this Theory is readily received. But we have before rejected this Theory and refused the transferring the notion of Mechanical to Chemical Acrids. The Doctrine of particles of the Salts being angular is without foundation.

Dr. Hooke has accounted for the Crystallization of water merely on the supposition of its particles being spherical; further, Sales non agent nisi soluti, Dr. Gaubius tho' he admits this notion in general cannot

cannot reconcile himself perfectly to it. Even Oils are as considerable Acrids as Salts, and it would be difficult to prove that Oils are of a Saline nature. Menstrua are not to be considered as acting mechanically, and it is now generally received that this depends on Attraction; Because the O^r dissolves Silver we are not to conclude that its particles are Angular or act as Wedges; there is no occasion therefore for us to transferr this to the Animal body - Acrimony by its producing Solution of Continuity may be referred to the force of Impulse. But we are inclined to go further and suppose that the business of taste depends on the particular Oscillations of bodies designed to act on these Organs. This too then is referred to the force of Impulse.

There still remains the Impressions of Heat & Cold. That Heat sets the particles of all bodies at a greater distance is very obvious, but a particular illustration arises from the case of Heat. Every change of temperature from a lower to a higher degree gives a Sensation of Heat, tho' this is lower than the internal heat; all the Sensations of heat however are never painful, and that because they never can have the effect of expanding the solid matter till they exceed the

the internal heat of the system. In Cold we meet with great difficulties as this brings particles nearer together. May we say that a Sense of Cold is, not the Sensation of Condensation but of the increased impetus of the blood on these constricted fibres? But we have not yet sufficiently digested our Thoughts on this head, and must at present leave this problem. Besides Solution of Continuity Dr. Gaubius seems to adopt some other causes of pain. What he means by Tenor there we do not perfectly understand. We are averse to admit of these notions as they are rather Romantic and rather refer the Phenomena to the different modes of Impulse acting as above mentioned. We may refer pain either to distension, or Spasm chiefly. We may add to this Chemical Acrimony, but this is topical and affects only the extremities of Nerves. Dr. Gaubius here starts the notion of Dolor Imaginarius. We don't know the facts in proof of it, and doubt of the doctrine even from the very circumstances adduced by him in proof of it, viz, Dreams and Deliriums. He says that we have the Idea of pain without the Sensation of it; but before observed that the Memory cannot renew the Idea of pain, viz so internal affections cannot renew them as they renew only such as before were

were laid up in the memory. An important question is to determine whether pain always arises from Impressions on the Extremities of Nerves or sometimes from Impressions directly made on the Sensorium Commune. Dr. Gaubius thinks that many Sensations may be renewed by Impressions on the Sensorium Commune, and among these pain. Even in Dreams & Delirium sensations are not to be renewed but by inducing the same state in the extremities of Nerves. With regard to Light and Sounds can renew Sensations but less perfectly in the last case than in Light. In the other Senses we don't find that we can recollect or renew Odours or Tastes. We have indeed a reminiscence, so that an odour being presented to us we can remember to have had it presented to us before. If this was attended with any reflex Sensations the bare name of such Odour and Taste will be attended with the same Sensation & Motion. So far it goes and no further. Even in Dreams and Deliriums the Imagination is confined only to the Objects of Sight and Hearing, therefore we refuse that there is any imaginary pain and that this must imply a particular state in the Extremities of the Nerves; the Sensation then of pain whenever it occurs always implies a change in the Extremities of Nerves. Most
other

other changes may consist in a difference of the Oscillations solely; but pain seems to consist in a change of the state of the solid matter of the Nerve. The Mind always refers pain to some particular part but is not very accurate in doing this, or only with regard to the surface of the Body; there it is of particular use to direct us to remove the hurtful Impression. In other cases we refer the pain to the part very grossly as is plain in the instance of pain in the Hypochondrium. We talk of Rheumatism and Gout as differing in the depth of their seat, whereas our sensations give us no precision in this respect. Investigating the place of pain is very important — Here is the place to enquire into Sympathetic pains; that pain may be felt in other parts besides that in which the Impression is made we acknowledge, but not on the common footing. Only in one case do we make a false relation to a part, as when the mind has long been in the habit of referring pain to an extremity of the Nerve on which the Impression was made. This is the noted Phenomena attending on Amputation depending on the force of habit. Pains are sometimes felt not directly in the part in which the Impression is made but in a different one. First we should have observed in speaking of Distension as

a cause of Pain, that this may be from the Nervous power passing more copiously, into a particular part, and which may perhaps account for Spasm.

In consequence of Oscillations propagated along continued Solids the pain may be felt at a distance from the place of Impression. Another case is when the Oscillation is freely propagated along continuous Membranes which transmitting it freely are attended with no considerable pain; but in parts, where it is confined it produces pain, hence the cause of pain in Joints. Where parts are insensible tho' capable of Oscillation the pain may be felt at a distance from the place of the impression, hence the pain in the Glans penis from a stone in the bladder. There is a 4th case where a membrane is only fixed at one extremity, the pain may be propagated along the Membrane to the part where it is more fixed; thus the pain in the shoulder from a Schirrous liver may be accounted for. These seem to be the only cases of Sympathetic pains in our System.

In many cases an Idea excited in the Sensorium Commune will produce the same state in the Extremities of Nerves with external impressions. This however is limited nor can the Idea of pain be renewed in the Sensorium and therefore cannot renew the state

(a) This seems to be a wise provision of Nature to prevent the fatal effects to the System that would otherwise on many occasions ensue.

state in the Extremity of the Nerve. Another thing to be mentioned here. Pain is produced by various Impressions, and these modify the Sensation of pain variously. Pains produced in the external surface have a mode in some measure expressing the mode of the External Impression; the question is whether we can transferr this to the internal parts. Dr Gaultius is disposed to think that we may. This however is very unsuitable to his former doctrine of Imaginary pain. We would allow the fact tho' it is difficultly reconciled to some parts of Theory. Dr Gaultius next proceeds to mention the effects of pain. Pain first acts as a Stimulus exciting the Nervous Inflex into the part affected as also into the neighbouring parts and so exciting the impetus of the blood in the neighbouring vessels. Pain is further to be considered as an uneasy Sensation of the mind, and in that view it seems to be a general Stimulus. But we must limit these Stimulant effects to pain in certain degrees, for beyond that it may produce fainting, and if it was not for that would frequently produce Death. Further, when pain has continued long in any one part, as if it was accompanied with over distension, the parts dont recover their former tone, but continue flaccid. This view extricates the matter from the
 confusion

Anxiety seems to be nothing else but a difficulty of
performing our Intellectual Operations.

confusion in which it seems to lie in Haubius. The pain is not always suitable to the M ^P

but it is to the force of the Impression and the Sensibility of the part and person affected. If a man has been shut up in the dark for sometime a moderate degree of light will affect him much from the Sensibility his Eyes have acquired. There may be conditions giving a Sensibility to a part so as to occasion a Sensation of pain at one time from the same Impressions, which dont at all another. This will explain some matters of dispute between Dr Haller and his adversaries.

We come now to the head of *Anxietas*, which we interpret by the name of Sickness. This however is synonymous to Disease, and must therefore be of great extent in Pathology; as a simple perception it cannot be defined. It undoubtedly arises from Internal Impressions which we dont always directly receive and dont refer to the part affected. We follow Dr Haubius in first considering it as belonging to the Mind. It is there an uneasy propensity to remove a present or prevent an impending harm, or it is an uneasiness arising from the want of a certain object the means of which are wanting. When Fear gives Anxiety this is not to be considered as a disease since it both not arise from a change in

in the state of the parts, but if a person estimated these fears much higher than they are in fact, this is a morbid anxiety arising from a change in the state of the Corporeal System. Anxiety is very apt to induce Pusillanimity. To trace the changes of the body.

When joined with inconsistency it is then a part of delirium and may be imputed to causes acting directly on the Sensorium. Again, when an imaginary Fear is single and not attended with other inconsistency, and particularly when no bodily symptoms occur then this makes the true Melancholia which seems to depend on a more partial affection of the Sensorium; but when this is attended with morbid symptoms in other parts and particularly the Alimentary Canal, this gives the Melancholia Hypochondriaca; this then depends on a different state in the extremities of nerves. Gaubius assigns a very general cause here, Resistance to secretions of all kinds. Some of the various species here introduced seem without foundation, others however are very proper. It is to be doubted here whether all these Molimina Secretoria may be supposed directly to produce this Sensation of Anxiety or rather some of them don't produce others more apparent

apparent causes of Anxiety.)

Such for instance is a difficult transmission of blood thro' the Lungs giving difficult Respiration. Another cause of Anxiety is a Sense of Resistance to the transmission of blood thro' the heart; these are oft combined but sometimes separate. A 3^d cause of Anxiety is a difficult transmission of blood thro' the Abdominal viscera; we are not sensible of this as of the other two and rather infer it. A 4.th head ought to be marked out and which seems omitted by Gaubius, this is that a Sense of Anxiety very commonly depends on the state of the Stomach. This seems to be the cause to which the term sickness or Anxiety is most strictly applied. This Sensation joins itself so frequently to the other that oft it may be doubted whether this is not the primary cause, and whether the others may not act in inducing this. In the first place this, may be brought on by various matters thrown into the Stomach, as by all those matters which at last bring on Vomiting. It seems to be then that state of the Stomach immediately preceding Vomiting. Dr. Gaubius in treating of Vomiting mentions the various remote causes of it, but no where touches the proximate cause of it which must

must be this very state we are enquiring into. It is reckoned sufficient to say that it depends on Stimulus, but this instead of increasing the Peristaltic motion stops it or determines it upwards by constricting and elevating the Pylorus. This is attended at first with Anxiety afterwards with Vomiting. It is not therefore the Stimulus of Specae. that produces the action of vomiting, but it produces this state of the Stomach which is the proximate cause of vomiting. We find all the same effects brought on by causes not directly applied to the Stomach. This state of the Stomach is connected with various other parts of the body and this is accounted for by Sympathy on which we have before spoke. It is necessary here to enquire how these different Sympathies can induce this state of the Stomach which induces Anxiety. This subject we have before handled and shall therefore proceed now to the next part of Gaubius.

The *Actiones Sensuum Externorum Lesae* must be omitted for the same reasons here as in Physiology, and so we proceed to the

Sensuum Internorum Lesiones.

All these may be referred to Delirium. Concerning this we have to mark its general nature, its degrees, and

and various causes. Delirium consists in a train of Ideas not connected by or properly contrary to their usual relation; but it may also consist in false conclusions from impressions that do not exist or don't then act on us, therefore it very oft consists in this that either real or imaginary Impressions excite the passions of Fear or Anger in a degree far beyond their proper force. From these views there is some foundation laid for distinguishing different species of delirium. There may be another foundation from its different causes. It is but seldom separated in fact into these different species and more commonly it differs in degrees; when it comes on by degrees it comes on usually thus, with an impaired recollection with a difficult transition of our Ideas; this gradually increases to an involuntary train, but this without inconsistency. It then proceeds to the irregular transitions in which it chiefly consists. If this continues there is commonly the case of false Imagination added, and this induces those violent passions which give the highest degree of Delirium. It may be observed that Delirium commonly begins with Dreams which seem to arise from the same causes but in an inferior degree, or with a state between sleeping

Sleeping and waking. The application of all this, especially in fevers is very obvious.

To enquire now into the causes of Delirium. It is unnecessary to premise with Gaubius that it is in part corporeal tho' not entirely and only so far as it is so can we enquire into its causes. Nothing more absurd than the Stahlian doctrine about the independant actions of the mind. We shall refer the causes to 3 general heads which are

1. Internal Impressions having the effect of external, and so either interrupting the ordinary train or mixing themselves with it and thereby producing inconsistency. Such is increased impetus of the blood in the brain or particularly in some organ of Sense as those of Seeing and Hearing whose Ideas are capable of being renewed. A curious case of this was a Lady who was particularly affected with the images of hobgoblins before her which gave her a disturbed mind; her Physician was present when she was thus seized and endeavoured to lay his hands on her Eyes, but he only covered one and yet the Hobgoblins disappeared; on repeating the Experiment and covering up this eye the Lady was cured of the false Imaginations which shows that they depended entirely on some fault of that Eye.

But

But further, pain and anxiety from various, causes serve on many occasions to cause Incoherence in the train of thinking; this is very evident from the effects of uneasy postures in producing dreams. To this head it belongs to observe that if we have ~~not~~ the command of our attention any new Impression will interrupt and disturb the ordinary train of thinking. There is an instance of a person whose delirium was highly increased by having his bed placed in a different part of the room and was cured by replacing it.

2. Interrupted Communication between several parts of the Sensorium may occasion delirium. The affair of Memory seems to depend on a particular corporeal Organ in the brain. Dissection however in many cases doth not discover any of these Organic affections. Dr Gaubius's arrangement here would afford room for Criticism, but our time doth not permit.

3. A resistance to the Influa of the Nervous power arising from the State of the Nerves themselves or from causes acting on their Extremities. We deduce this from hence that we explained sleep to arise chiefly from such a resistance, Need we

to add that many causes of Sleep act on being applied to the Extremities of Nerves, as Cold & Opium. Delirium thus distinguished by its causes is treated on 3 different Indications. The first is to diminish the increased Impetus and chiefly by blood letting. The 2^d is to restore the communication, this is very difficult and scarcely to be attempted. The 3^d is to overcome that resistance to the Nervous power which contrary to the first is oft to be done by Stimuli. Blisters answer this end both as taking off Spasms from the Surface and as Stimulants; this demands our attention the management of delirium in advanced state of fevers being very difficult.

We proceed next to consider the affections of Motion. These equally apply to all the motions belonging to the 3 several functions. We here consider motion as confined to the Muscular fibres and in this review as offending in Excess or defect. To these Gaubius applies the terms Spasm and Palsy. The first of these is not used with precision it confounding proper Spasm with motus convulsiva. These are different species of the same genus. The Ambiguity that has occurred in Authors is not without some foundation. In the first place they
seems

seem to differ only in degree, and spasm to be
 only an increased degree of Convulsion; They have
 often too the same causes, still however they are
 carefully to be distinguished since their effects
 are very different. Convulsion increases the action
 and all the effects of Contraction, Spasm stops both.
 It were to be wished that the different states of the
 Muscles under them could be explained. Convulsi-
 on evidently depends on a greater influx of the
 Nervous power, so doth Spasm, but why it goes
 farther and is not disposed to remit depends on par-
 ticular Organization of the muscle with which we
 are unacquainted. Several curious questions occur
 here. Doth Spasm occur in the heart? I am convin-
 ced that it doth. I know a gentleman subject to
 frequent faintings more from exercise than Inani-
 tion; he died in one of these, and on being opened
 nothing like Polypia or Aneurysm was found, whence
 we suppose that the heart is liable to spasm. Is
 Spasm of different degrees? I am convinced that
 there is and that several parts labour under a
 greater degree of Tonic power but not going so far
 as Spasm.

Next we are to consider the causes of Spasm.
 We

We ascribe it to an increased influx of nervous power into Muscular fibres. But we are to consider whether this is always derived from the Sensorium or is in consequence of Stimuli applied to Nerves in their course, as also whether something doth not depend here on the state of the muscle. In the ordinary case of Tremor it seems to depend on Atonia of the muscles rather than any fault in the influx of the Nervous power.

Another consideration on this subject is that it is very common to refer the whole to Irritamenta or Stimuli or some impression that is the cause of Increased influx. But this is not always the case and it is oft entirely owing to increased mobility. This is the proper Irritability of Dr Gaubius. Thirdly, supposing no peculiar mobility in the whole System or particular parts there are some causes acting on the Sensorium alone others on the Muscular Organs, a 3^d set on the Nerves in their course. It is very difficult to refer the causes of excessive motion as Irritamenta to general heads, it must however be attempted. In the first place all Impressions of a great degree of force not only produce their proper motions with some velocity and force, but also the same sort of motions in

in the whole of the System. I would separate from
 these Impressions not acting as Stimuli, but by
 acting on the Sensorium produce a reaction of that
 as Cold, Opium &c. Among the rest we may reckon
 whatever considerably weakens the Tonic power
 of the System; thus whatever weakens the action
 of the heart greatly and suddenly as fainting, acce-
 sive evacuations &c is very apt to induce Spasm
 and Convulsion. In the next place from whatever
 cause all strong and long continued efforts tend
 to produce Spasm and Convulsion; still more re-
 markably all hurried efforts have this effect, more
 particularly they do this as attended with violent
 passions and emotions. The Nervous System is to
 be considered as equally balanced; to this purpose
 it is to be observed that many causes acting seem-
 ingly equally on the whole Sensorium affect one
 side of the body only. This points out that the two
 Hemispheres of the brain counterbalance each other
 so that the want of a proper Equilibrium between
 them directs the impression to a particular side;
 but habit will oft throw the balance too much on
 one side and therefore will give occasion to this
 effect. We must add to all this one especial
 cause of convulsion, Imitation. In studying this
 subject,

subject we must always take into consideration the power of habit. Convulsive motions are easily repeated, readily become habitual, and will then be oft repeated when the Original Impression is removed.

(We are now to speak of defect of Motion. Here we first confine ourselves to loss of motion tho' under Paralysis loss of sense is also oft comprehended. The motion of a muscle may be hindered either by the state of the Nervous power or by various organic affections in the structure of the muscle. If from Oedema the motion of a muscle is prevented we don't call this palsy which implies an affection of the proper moving powers; hence we throw out the 1st general cause of Dr Haubius as also the 2^d the state of the Arterial Circulation, for we know that this may be impaired for a very long time without affecting the motion of the muscle. We consider Palsy as an affection of the Nervous System & we must therefore in that sect. for its causes. These are whatever prevents the communication by which the increased Nervous influx at every contraction is deriving to the muscle, so far that the powers of Stimuli applied to the Origin of the nerves or a part of the Nerve superior to the place where the communication is intercepted, has no power of inducing contraction

Contraction. The causes of this interruption we readily ascribe to pressure and very universally suppose this as the only cause; but there seem to be other causes arising from a particular state of the Sensorium, tho' what this is we don't know. We are induced to think thus because Palsy oft remains after the compressing cause is removed as we should imagine from observing that these causes are not attended with other considerable affections as should be expected. How are we to explain this? We have formerly referred sleep to a particular state of the nerves themselves. It is very probable that whilst Compression may occasion this it may do it by that *Collapsus fistularum Nervorum* we spoke of; further, we find Palsy most commonly cured by Stimuli. I must now add that there is reason to believe that there are various degrees of Palsy depending on particular Compression. Sydenham distinguishes Paralysis from Atonia in an ambiguous manner. We distinguish them on another foundation. Want or decay in Muscular fibres may depend on want of influx from the Sensorium or want of proper condition of the Muscles particularly Tension. To the first of these we apply the term Palsy to the latter Atonia. Some Ambiguity occurs here.

here, since we have before said that the Tension of the muscles depend partly on the Nervous Influx. To be more clear we would say that when it is a fault of the tonic power, this may properly be called Atonia, other cases Paralysis. We should next go on to another subject connected with this last, the Somni Affectiones. Of the 4 causes here assigned we cannot help remarking the last. Dr Haubius has always adhered to the Stahlian system, but seldom shows it, here however is a flight not inferior to any of theirs. This finishes the whole of the Symptoma Motuum Animalium.

We come now to consider the Symptomata Motuum Vitalium, and shall with him begin with Symptomata Respirationis. Of the effects of Respiration we shall consider only difficult Respiration. This may be either in Inspiration or Expiration, but 1000 times in Inspiration for once in Expiration. Its causes we refer to 3 heads - 1. The condition of the Air. 2. The Obstruction of the passages thro' which the Air enters the lungs. 3. The condition of the lungs themselves. The Air may be either too rare too warm or too dense, or what amounts to the same too heavy. Having before spoken largely of the effects of Air on our bodies we don't need to say much on this

this subject. The Putrefaction of the Air is always to be taken in, nor can quantity alone suffice, hence too rare or too warm air allows the blood to be accumulated in the Lungs and so gives occasion to Asthma and particularly Hemoptoe. Many difficulties occur here in all our reasoning with regard to the weight of the Air I don't believe that we should ever feel the effects of too dense Air. With regard to the diving Bell we are not acquainted with the facts and leave it as a subject of enquiry.

The next head of causes will operate in delaying the transmission of the Air which is necessary to expand the Lungs. To give an observation here we have lately had an Epidemic Angina with Exudations on the fauces giving Sloughs and much Mucus. This has given a Stertor in breathing as of difficult breathing, but the Stertor here occurred in Expiration more than Inspiration. This relieved our fears about the Glottis being affected by the swelling, and depended merely on the quickness of Expiration in comparison of Inspiration. The most general case of difficult Respiration is from the condition of the Lungs themselves, this we have divided into two cases perhaps not properly, for some

(a) Vid. what was before said de Nociv. Atmosph. Potentius

some of the moving powers act in diminishing the proper capacity of the lungs. The first affection of the moving powers is Spasm or Constriction, and this is proper Asthma in opposition to Dyspnoea. The causes of this may be matters introduced in the Air or other causes acting generally internally. Among these is Cold, and this is the case of Asthmatics, who are most affected in Winter. Perhaps we should have introduced here Warm Air, since many more Asthmatics are affected in Summer than Winter, but we did not do it chusing rather to refer it to the 3^d head of Internal causes. Of the Aer Inguinalis we have spoke before. We must own here that a great variety of Inguinamenta may give occasion to Asthmatic Complaints tho' they do not in inducing diseases in general. We must here mention a particular Inguinamentum, Dust. A quantity of this must be taken into the lungs, and yet we find little mischief from it, it being usually detained in some part or other of the passages leading to the lungs.

In many cases however it doth not hurt us and Sauvages has very properly given a Dyspnoea Pulverulentum. In the 3^d place the Spasm may be induced by various internal causes acting either immediately on the lungs or on neighbouring parts. All the

the various Infarctions of the Lungs following here may give occasion to Spasm; hence too rare air by preventing the proper transmission of the blood may occasion Spasm, [hence too, rare Air by preventing the proper transmissi-] of the powers acting on the Sensorium &c must refer to the study of Spasm and Convulsion.

The next head we have inserted on the Authority of Sauvages. I think the Lungs may be affected with Palsy. In an Hemiplegia the intercostals of one side one would expect to be affected and perhaps too one robe of the lungs; but in most cases of Hemiplegia not only the lungs but intercostals are not affected in consequence as it should seem of the constancy of the vital motions, tho' on what this depends is not well known; we have seen cases where the Lungs were also affected. It is doubtful whether we can admit the Dyspnoea Galemica of Sauvages. Here particularly is expiration affected, but without being attended with any great inconvenience. We would observe on this that there may be degrees of Palsy; thus the Respiration is rendered more slow in several comatose states and sometimes almost entirely stopt; various other causes of debility in general affect Respiration, hence all weak

weak persons cannot bear sudden motion they not
being able to transmit the blood as fast as it is
sent to them. This seems to be the case in the Dyspnea
Scorbaticorum. We have added a 4th head of which
we have instances in Pleurisy and Peripneumonia,
as also in Hepatitis &c. We come now to the 2^d head
of causes which we have again divided into Ob-
struction ⁱⁿ the Lungs themselves and Compression
without them. This is not proper if the term Obstruc-
tion is used in the sense we before gave it. By
it here we mean the Effusus of Gaubius. The sub-
divisions belong properly to the head of Obturatio
and are of three kinds. The first is of Humors effused
into the Bronchia, Gaubius in enumerating the fluids
that may be effused, mentions the Ferria, Polypusa,
Podagrica &c. But we know nothing either of the
cases of these or of their possibility. With regard to the
2^d head we must observe that it is connected with a
case which we have not touched here. I imagine
that it is rather an effusion or concretion than Con-
gestion. Dr Haaw gives a case of a matter spit up of
the exact figure of the Trunk and branches of the
bronchia. Of the next head the first subdivision is
Plethora. I would wish to have added Obesity, but
this

223.
this and Plethora have the same effects. It is to be
observed that Independant of general Plethora
there is oft a topical Accumulation in the Lungs
as in the cold fit of ale fevers. The 2^d head requires
no Comment. The 3^d would have admitted of fur-
ther Subdivision as it comprehends the noted case
of Tubercles. Osmia may be understood to be a
consequence of this and the Inflammatory State.
By the first instance of Compression here given
we meant to express a case which lately occurred
to us of a tumour as large as an hen's egg found
at the divarication of the Trachea. The proper
instance of the second is the Hydrops Pericardii.
The proper cases of the 4th are Empyema & Hydro-
thorax. The instances of Conformatio Mala may
be found in Sauvages under his Dyspnoea Rachitica.
Must observe of this here that Sauvages has multi-
plied his species far beyond what is necessary
which particularly appears in this case of Dyspnoea
which is very seldom a primary affection, yet is
divided into a great number of species by him.

We proceed now to the next head of Laubius. There
is no occasion to treat here of Palpitation and tre-
mor, for they cannot be understood but from the
doctrine of Spasm of which this is the best illus-
-tration

tration. We proceed to another symptom of the Cordis Motus, viz, Arteriarum Pulsus. Shall enter here into the nice distinctions of our Systematics on this head. We shall consider first the state of frequency of the Pulse.

We must here premise that we consider only properly the Action of the Ventricles of the Heart, which are Synchronous, so that whatever acts on the same brings the other into consent. The action of the ventricles depends either on the Influx of venous blood or influx of Nervous power. It is not necessary to determine whether at every contraction a fresh influx is sent from the Sensorium or the Tonic power in the Muscle is sufficient.

1. With regard to the Venous blood it is obvious that this is the chief and ordinary Stimulus to the Heart's contraction, and therefore if poured more quickly into the Heart the heart's contraction will be quickened, hence Muscular Exercise or quickened respiration will increase the frequency of the Pulse, so will whatever quickens the general circulation. This will depend much on the proportion of the system of vessels to the heart itself, and to this, may we refer the difference of frequency of pulse in different

different Ages. The velocity of the venous blood being given if any cause prevents the entire emptying the ventricles this will occasion the venous blood to fill the heart sooner and so quicken the contraction. This may be of two kinds first the weakness of the ventricles from any cause, hence it is in part that a weak and frequent pulse are so oft combined. The 2^d is any resistance in the larger vessels from Polypus, Spasm &c. This resistance is more frequent to the right ventricle from the various obstructions in the lungs, and from the various modifications of Coughing, Laughing &c. These however act in a double way since they also expedite the motion of the venous blood. It is probably to obviate these causes that the right ventricle is larger than the left. We come now to the 2^d cause of frequent contraction the state of the nervous power. This depends, first, on the heart's irritability. We may observe that wherever we find general Irritability of the system there is commonly a quickened pulse. Whether this is always connected with general Irritability of the system is not certain. The state of the Tonic power may be opposed to irritability, hence we may explain the

(a) It is Ambiguous whether these are to be referred to
Nervous Influx or to Sonic Power only.

the slowness of pulse in persons otherwise strong 226.
and healthy. As firmness of Tonic power thus
gives a slow pulse, Atonia must quicken contrac-
tion. This it doth, first by giving Irritability. By
this increased irritability from Atonia and also
by its preventing the proper depletion of the
ventricles it gives a quickened pulse, yet in
some cases Atonia seems to go the length of
Torpor and Insensibility. Tho' Atonia then may
be considered as residing in the muscular fibres
yet it is connected with the energy of the Sensori-
um. (The several passions of the mind give a
strong proof of this. These are the effects of the state
of the Tonic power. Now to speak of such as are
to be referred to its influx, among these are Sti-
muli Applied to the heart itself. It is to be en-
quired here whether there are any such peculiar
stimuli, and what they are. Heat is commonly reck-
oned such, but, as it should seem, improperly. —
For supposing Heat generated else where yet from
communication it can have little effect. But every
increase of heat in the system must in general
prove a Stimulus and excite frequent contraction.
Another supposed Stimulus is intestine motion of
our

227.
of our fluids. There may be such but a very quick
one and not capable of stimulating the heart or
vessels; at best it is quite Hypothetical. Where
this and frequency of pulse are combined they both
probably depend on the same cause. If this has
such effects it may be from matter generated
thereby. This leads to the third supposition of Stim-
ulus from various acrid matters either brought
from without or generated within the body. We
must observe of this that this is one of the possible
suppositions tho' not very probable, or allowing
it's probability we scarce know when these Stimuli
operate. There is always present in our Mass of
blood acrid matters which affects various secretions,
but this doth not affect the Circulation, which leads
to the supposition that the Inner coats of vessels
are not so very sensible. Acrimony is also oft
present of a natural kind but in a much higher
degree without affecting the Circulation, so we
before instanced in the case of Urine or Urinous
matter circulating in the Mass of blood as also of
Bile without affecting the action of the Heart or
Vessels. In the Scurvy the Blood is in a very acrid
state, but oft there is no fever here present. We
conclude

conclude then that it is very doubtful what degree of Acrimony can stimulate the heart and therefore when this case can have place. We commonly suppose that Pus absorbed brings on fever and that by stimulating the heart. It is not altogether without reason since the Exacerbation of this fever observe the two natural diurnal Paroxysms. But in opposition to this we find Pus off present in the blood without any such effect. This instance of Pus too is ambiguous; for, first, there is an Inflammatory state then present, 2. Increasing the natural Exacerbations it acts like all the other direct causes of fever by bringing on a cold fit so that it doth not seem to act as a direct stimulus to the heart. It is alledged that many Chemical Acids irritate the heart, but it is doubtful how & in what quantity they can arrive at the heart. Most of them are such as become inert on diffusion and therefore can have no effect this way. If any Acid matter then doth act directly as a stimulus to the heart in any case it must be very rarely, we shall rather find that Acid matters act by exciting pain & inflammation in other parts, and in consequence of that exciting the action of the heart. Such seems to

to be the action of Cantharides. On the whole then the doctrine of direct Stimuli is in a great measure to be deserted. We must therefore next consider the Indirect Stimuli. These are of two kinds, first, such as may be supposed to act by direct impulse exciting the Nervous influence to all parts of the body and particularly to the heart, and 2^{dly} such as act by exciting fever which we have before shown to arise otherwise than by direct impulse.

We must now observe that the particulars are difficult of Arrangement in these Classes. The first difficulty occurs with regard to Sedatives proving Stimuli to the heart's action. We before offered a Theory to explain this, or independant of that every sedative may contain stimulating matter; if so they will come under direct impulse; but if we admit another supposition that they only prove Stimuli by exciting the reaction of the Sensorium they should be rather referred to this head. Another difficulty is whether Stimulus exciting Inflammation always acts by direct impulse or in exciting the causes of Fever. After this to give the particulars of the first class reduced under a few general heads. In general all

(a) We say will prove stimuli here, because we only know this sometimes from experience of their effects, thus it happens in the case of purgatives which will sometimes produce Inflammation if long applied tho' we may be insensible of their operation

all Impressions so far as they produce ^{direct} Sensation,
in opposition to reflex Sensation, proves a Stim-
-ulus, as light, noise, &c. These in particular are
are off Stimuli merely by their novelty, in other
cases by the force of Impression. 2. Various reflex
sensations as attended with pleasure or pain
Desire or Aversion prove Stimuli; pleasure, bodily
pain, & desire may in general be reckoned Sti-
-muli. The Sedatives are to be found in the
uneasy and disagreeable Impressions & those
exciting Aversion. All such as do or will ~~Excite~~
inflammation in the part to which they are
applied prove Stimuli. The purgatives by their
operation prove Stimuli & by their effects only
discover this. Lastly Sedative Impressions in
their first operation. Of the 2^d Set of Stimuli pro-
-ducing Fever, they are Contagion, Cold, Fear,
Haemorrhagica Molimina and febrile Congestions.
This gives the whole of the causes respecting the
frequency of the Pulse. The other considerations
respecting different states of the pulse we chuse
to pass over. We are inclined to admitt of the
distinction between the Pulsus Celer and frequens.
Another

Another view of the pulse as Intermittent or
Regular. This will be the whole of Palpitation
to be referred to the doctrine of Spasm & Convulsion.

(With this we finish our observations on
Pathology, and we shall now proceed to our 3^d
part viz, Methodus Medendi.

Finis.

